SEPTEMBER 20, 1958
VOL. 155 — NO. 12

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY

THE LITTLE HELPER

Installers often are accompanied by an interested or curious by-stander. Here a "young fry" makes believe he is talking to a neighborhood friend.

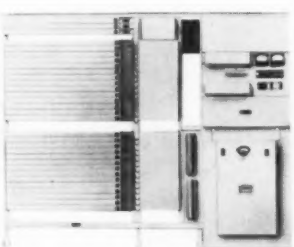
Published every week on Saturday by TELEPHONY PUBLISHING CORP. 608 S. Dearborn St., Chicago 5, Ill. Subscription $4.00 per year. Entered as second class matter at the Post Office at Chicago, Ill., under the act of Mar. 3, 1879.

Guaranteed Circulation This Issue
12,964 of Which 12,400 Is Paid

MANAGEMENT • PLANT • TRAFFIC • COMMERCIAL • LEGAL • ACCOUNTING

● READY ANY TIME...Dial PBX's by Stromberg-Carlson are ready to install whenever your subscribers wish. Units are in stock and completely wired. No special cabling or equipment needed -- just plug in for complete internal and external communications. The F-40 PBX is compact, quiet in operation. Styled as modern

office furniture, it blends beautifully, rolls anywhere. The F-80, with larger capacity, is ideal for your bigger commercial subscribers. For full details, consult with your nearest Stromberg-Carlson representative.



STROMBERG-CARLSON A DIVISION OF GENERAL DYNAMICS CORPORATION

ELECTRONIC AND COMMUNICATION PRODUCTS FOR HOME, INDUSTRY AND DEFENSE

Nearby Kellogg Supplies help restore service after devastating Iowa tornadoes

Thanks to close-at-hand supplies from Kellogg, La Porte, Iowa's telephone service was rapidly restored after heavy tornado damage in late spring. Close cooperation between M. W. Wagner, manager of La Porte's telephone company and the Kellogg regional warehouse in Kansas City, Kansas put 750 telephones back in service within ten days although miles of line were down throughout the area. True to the traditions of the telephone industry, more fortunate neighboring companies sent emergency service personnel into La Porte to help with restoration.

La Porte's disaster is typical of that faced each year by hundreds of independent companies throughout the country. In all cases, and at all times, the regional Kellogg warehouse stands ready to be of service, as with La Porte.

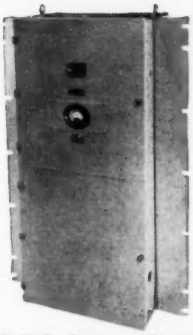
Completely stocked and equipped, you'll find your Kellogg warehouse the ideal place to fill your supply needs, regardless of how large or small your requirements may be.

Kellogg Switchboard and Supply Company, 6650 South Cicero Avenue, Chicago 38, Ill. Communications Division of International Telephone and Telegraph Corporation.

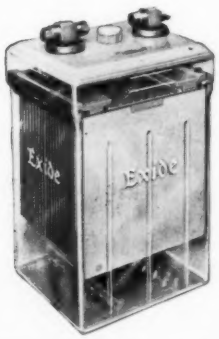
KELLOGG
CHICAGO, ILLINOIS
Communications Division of IT&T

Cook Cable Coat eliminates need for taped splices or potting, and can be provided with selective pair protection. Terminal blocks for making cable conductor taps are filled with plastic resin. Cutting and splicing are eliminated, and connections are made by tapping onto specified conductors. COOK ELECTRIC COMPANY.

Described as a "buffer," the Reliable No. 451 Single Pair Protector is designed to drain lightning and static voltages from open wires and long drop wires that are connected to cable. Also used to protect loudspeakers, coils, filters, and unprotected cable terminals. RELIABLE ELECTRIC COMPANY.



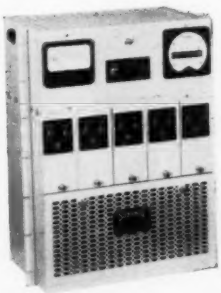
New 48-Volt Battery Charger Line. Completely redesigned Raytheon Recti-Chargers (R) feature no load to full load regulation of ±1%, no tubes, automatic compensation for rectifier aging, no audible hum. Most compact units on the market—single and three phase, output from 30 to 400 amperes. RAYTHEON MANUFACTURING COMPANY.



Big Capacity in Small Size. Unique positive plate in Exide-Tytex Battery has large area of active material that results in high capacity. Exclusive patented Silvium grid resists corrosion — prolongs battery life. Taperless plastic jars save one-third space. Exide Industrial Division, THE ELECTRIC STORAGE BATTERY COMPANY.

ANACONDA PAPER-LEAD TELEPHONE CABLE from 6 to 2121 pairs

A complete line from 19 Awg to 26 Awg. Available in all standard types: paper-lead, polyethylene protected lead, jute protected lead, buried tape armored lead (2 layer steel), gopher protected lead (1 layer steel). A type for every situation—aerial installation, use in ducts, or buried directly in earth. ANACONDA WIRE & CABLE CO.



Transistor Sub-Cycle—Operates directly from 50-volt exchange battery for regular or stand-by service. No expendable or moving parts—Stabilized ringing frequencies—Regulated ringing voltages—Sine wave output—Capacity 0.200 amp per ringing frequency—Available for Harmonic, Synchromonic, and Decimonic Ringing. LORAIN PRODUCTS CORPORATION.

Regional Offices and Warehouses:

CALIFORNIA
23 Broderick Road, Burlingame, Calif.
OXford 7-5780. TWX SAN MATEO CAL 06

GEORGIA
1594 Southland Circle, N.W., Atlanta 18, Ga.
SYcamore 4-2441. TWX AT 351

ILLINOIS
4600 So. Tripp Ave., Chicago 32, Illinois
CLiffside 4-4300. TWX CG 3296

KANSAS
7th & Sunshine Road, Kansas City 15, Kansas
MAyfair 1-4418. TWX KC KAN 1055

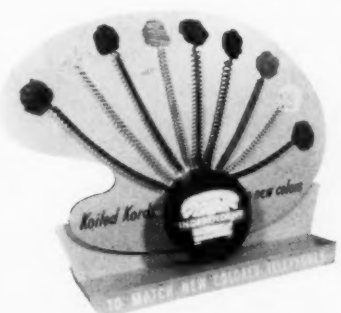
MINNESOTA
6100 Excelsior Blvd., Minneapolis 16, Minn.
West 9-6715. TWX MP 1195

NEW JERSEY
165 Prospect Street, Passaic, New Jersey
PRescott 9-3610. TWX PAS 1067

OHIO
1555 West Fourth Street, Mansfield, Ohio
LAfayette 4-6511. TWX MANS 0 132

TEXAS
1515 Turtle Creek Blvd., Dallas 7, Texas
RIverside 7-5191. TWX DL 02

EXPORT
165 Prospect Street, Passaic, N. J.
PRescott 5-3100. TWX PAS 1067



Koiled Kords—Customer satisfaction and long service life are assured with Koiled Kords retractile telephone cords. Black and colored cords in standard and extra lengths are available for replacement purposes and for use on new equipment. Made by KOILED KORDS, INCORPORATED.

Double-Groove Transposition. Insulator (No. 56) is employed for all circuits (exchange, toll, or trunk circuits) that employ tandem type transpositions. The test of time has proved the high quality of these Hemingray Insulators—a product of OWENS-ILLINOIS.

FLASHES AND PLUGS

HIGH CONCENTRATION. The San Diego (Cal.) *Tribune* recently carried the following "slice of life:"

"As a tipsy Lothario talked to his girl friend from the telephone booth at a drive-in, a car backed into the booth and toppled it to the ground. Nobody was hurt.

"In fact, says Chief Special Agent Chuck Bitner of Pacific Telephone & Telegraph Co., the connection wasn't broken and the Lothario went right on talking.

"The PT&T report reads stiffly: 'There is a serious question whether the party was aware that the station had been knocked down until agents arrived.' "

•

REFLECTIONS OF A COMMUNIST LEADER. In a recent UPI report from Copenhagen, Aksel Larsen, leader of Denmark's Communists, is said to have complained to the telephone company about the sloppy job "the secret police" were doing tapping his line. In a letter to the company, he said:

"I do not care to protest against wiretapping by the secret police, but the telephone company ought to have skilled technicians to do the job, and not have to leave it to such butterfingered persons."

•

BEYOND THE CALL OF DUTY. The old engineer pulled his favorite engine up to the water tank and briefed the new fireman on how to fill the tank.

The fireman got up on the tender and brought the spout down all right, but somehow his foot got caught in the chain and he stepped right into the tank.

As he floundered in the water, the engineer watched him with disdainful eye.

"Just fill the tank with water, Sonny," he drawled. "No need to stamp the stuff down."

•

BEASTLY BEQUEST. Old lady to little girl: "When I die I'm going to leave all my money to my cat."

Little girl, quickly: "And when you die will you please leave your cat to me?"—HELEN RICHARDS, *Illinois Bell News.*

•

GOVERNMENT STRICTURES. Postoffice officials recently ordered Michael Fox, 13, of Cyncoed, Wales, to dismantle his private telephone system which connects him with friends living nearby. Michael was told he was breaking an 1869 British law which gave the postoffice its monopoly over the nation's telephone service.

Michael built the telephone and its control room three years ago. To call his pals, Michael just pushed a converted doorbell attached to the receiver, waited for the gang to get on the line, and started talking.

CHANGE OF ADDRESS

Please notify your local postmaster and the Circulation Dept. of TELEPHONY of change of address. Change cannot be made without the old as well as the new address. Allow three weeks for change of address to become effective.

Telephony

THE JOURNAL OF THE TELEPHONE INDUSTRY
Since 1901

September 20, 1958

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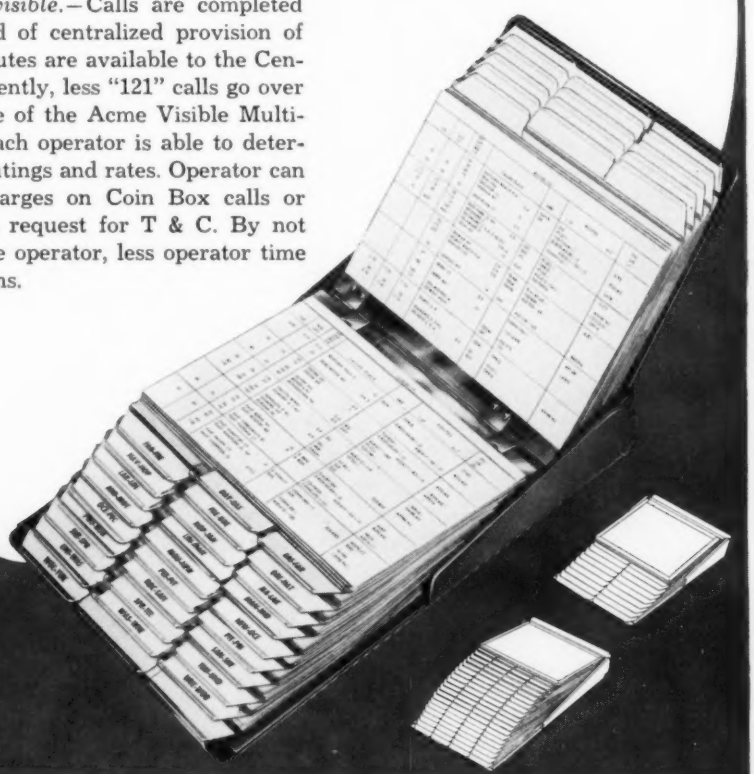
ACME VISIBLE

MULTI-CARD BULLETIN HOLDERS

Conserve circuit time . . . overtaxed facilities . . . operating force . reduce cost of service

One operator with her individual Routing Multi-Card file, containing over 95% of the routes for originating traffic, can do the job faster and more efficiently.—No need to bring in a second operator.—No guess work; routes are before her—*visible.*—Calls are completed quicker.—By this method of centralized provision of Routing records, more routes are available to the Central Office force. Consequently, less "121" calls go over LD circuits. With the use of the Acme Visible Multi-Card Bulletin Holders, each operator is able to determine over 95% of her routings and rates. Operator can immediately compute charges on Coin Box calls or where there has been a request for T & C. By not trunking to Rate & Route operator, less operator time is needed at these positions.

FOR LONG DISTANCE INTER-TOLL DIALING



3 SIZES
9 CAPACITIES

Carried in stock—with 10, 15 or 20 hangers. Each is available with 2, 3 or 4 pockets per hanger, providing a wide range of capacities—from 720 to 2,880 listings using 6 lines to the inch, and from 960 to 3,840 listings using 8 lines to the inch. Supplied with Acme Visible Cellulose acetate pockets 5¼" wide x 4⅛", with slant-cut index tabs and card inserts 5¼" wide x 3½". Inserts are used in both front and back of pockets. You may order one or as many as you need at a time. Units supplied complete with insert cards and labels for index tabs.

ACME VISIBLE RECORDS, INC. Telephone System Division, Crozet, Virginia

Please send us illustrated booklet T-9-20-58

☐ #1088 on Acme Switchboard Keyshelf Units ☐ #975 on Acme Flexoline

☐ Have representative call. Date_____ Time_____

☐ We are interested in Acme Visible equipment for_____ records.
KIND OF RECORD

COMPANY_____ ATTENTION_____

ADDRESS_____

CITY_____ ZONE____ STATE_____

Copperweld "talks better"

than any other

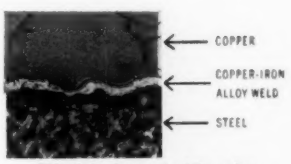
high-strength conductor!

Copperweld Line Wire keeps your subscribers phoning instead of moaning, often boosts toll revenue. Its molten-welded copper covering insures circuits that "speak up"—even on your longest lines.

Non-rusting Copperweld is right for carrier service, too, because its transmission characteristics are almost identical with those of solid copper. In the higher frequencies, they're *better!* Operating at 150 kc's, for instance, the attenuation of solid copper, 104 mil., is .317 db per mile. Attenuation of Copperweld, 104 mil., under the same conditions is .293 db per mile.

Because you can string longer spans on fewer poles, Copperweld reduces construction costs. Copperweld's lasting strength endures even under heavy wind and ice loading. It will keep your maintenance costs down.

You'll find a complete line of economical Copperweld products in Automatic's supply catalog. For quick delivery and helpful service, call your friendly Automatic Electric representative or your nearest A. E. Sales Corporation warehouse.



This photomicrograph of the molten weld shows how the grains of copper and steel interlock to form a permanent, continuous weld.

AUTOMATIC ELECTRIC

Subsidiary of **GENERAL TELEPHONE**

Two *NEW* Teletype tape

TAPE PUNCH

Teletype Model 28
Typing Reperforator

TAPE READER

Teletype Model 28
Transmitter-Distributor

units speed work, cut costs

More uniform work loads, greater accuracy, lower cost, faster handling, greater operating efficiency in:

• sales, sales analysis, warehousing, accounting, purchasing, production control, shipping, receiving, manufacturing;

• communications, data processing, automation and paperwork simplification.

These new punched tape units offer you the opportunity of extending your communication and business systems into new departments at a relatively low cost. They can be used individually . . . or in combination with other Teletype equipment . . . or with such business machines as computers, calculators and card punches.

All advanced Teletype Model 28 features —operation at 100 words per minute, handsome styling, compactness, extremely quiet operation, modular design, metal clutches that require oiling only once or twice a year.

TAPE PUNCH • The Teletype Model 28 Tape Punch is a receiving unit—for message relaying in communication systems . . . integrating data from several sources into a single tape . . . monitoring . . . by-product tapes.

Features and Specifications:

1. Receives incoming sequential signals and translates them into punched code combinations in tape.
2. Types corresponding characters on the tape.
3. Provides facility for parallel-wire output of incoming signals, with simultaneous punching of tape, for control of external equipment.

Speed 100 wpm (or lower speeds where required for compatibility with existing systems). Produces chadless (partially punched) 5-level code tape, 11/16" wide. Prints on tape. Dimensions, a compact 9½" high, 13" wide, and 14⅛" deep.

TAPE READER • The Teletype Model 28 Tape Reader is a transmitting unit. When punched tape is fed into the unit, it "reads" the code combinations and automatically sends them to their destination. Serves as a sending unit in communications systems . . . read-out device for business machines . . . control mechanism for automated equipment.

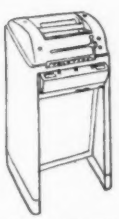
Features and Specifications:

1. Translates code in perforated tape into electrical impulses for sequential transmission.
2. Translates code in perforated tape into electrical impulses for parallel-wire transmission.
3. Receives electrical impulses from external parallel-wire source and translates them for sequential transmission.

Operates at 100 wpm (lower if required). Handles chadless or fully punched tape. Dimensions 6½" high, 9" wide, 16" deep.

MORE INFORMATION • For descriptive literature on the new Punch and Reader—or other units in the Teletype Model 28 line—please write to Teletype Corporation, Dept. 60J, 4100 Fullerton Avenue, Chicago 39, Illinois.

MODEL 28 PRINTER, SEND & RECEIVE



MODEL 28 PRINTER, RECEIVE ONLY

MODEL 28 ASR COMPOSITE SET

TELETYPE®
CORPORATION
SUBSIDIARY OF *Western Electric Company* INC.

HERE'S THE PABX

Tell about it . . . and business customers will demand it!

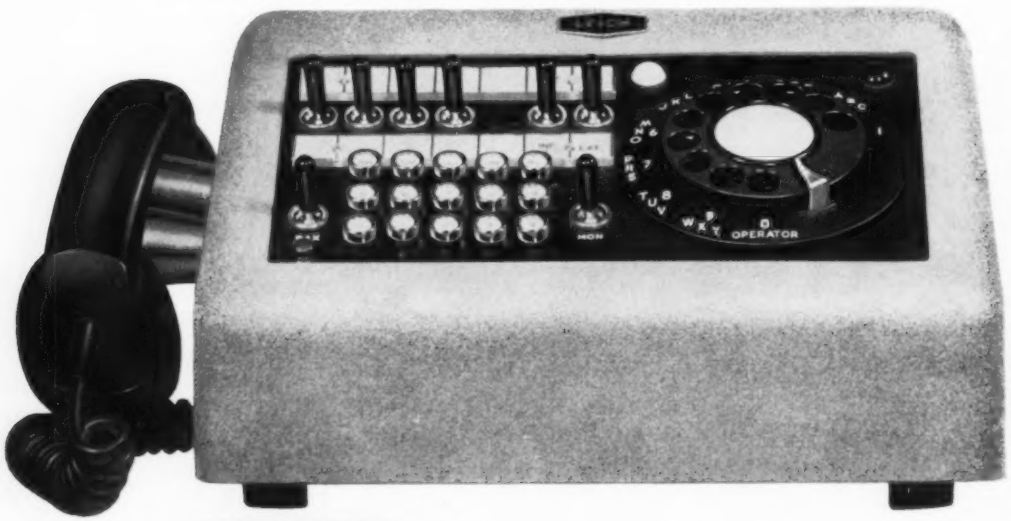
Ever have trouble breaking the ice with a PABX prospect? Here's a solution other telephone companies have found remarkably successful.

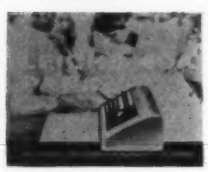
Send, as they did, for the Leich 40A PABX catalog. Show it to your PABX customers and prospects. Explain the features of the Leich 40A to them. You might also tell them the names of companies who already enjoy modern, fast service from Leich's 40A PABX. Several are listed elsewhere in this ad.

Our experience has been that once businesses know the story of Leich's 40A PABX, they want it. In 22 months after the first unit was installed in 1956, we shipped over 120 Leich 40A's.

10 Features You And Your Customers Will Like

1. Exclusive keyset turret is smaller than a typewriter.
2. Compact, all-relay Leich Dial Switchboard fits in any modern office or plant.
3. Capacity of up to 40 telephones with 10 trunks to the main exchange, and 6 local links.
4. Local Links are not tied up on city trunk calls.
5. Quick extension of outside calls to any required telephone.
6. Inside, outgoing, and consultation calls are made without help from the turret attendant.
7. Standard Leich Telephones are used.
8. City trunk storage (optional).
9. Maximum of two city trunk groups (optional).
10. Executive override feature (optional).





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LEICH
Subsidiary of GENERAL TELEPHONE

YOU'LL ENJOY SELLING!

The

LEICH 40A PABX

with the exclusive Keyset Turret

MORE 40A PABX USERS

(1) O. S. Keene Machine Co., Middlebury, Indiana; (2) Fairfield Hospital, Fairfield, Illinois; (3) Greater Rockford TV Center, Winnebago, Illinois; (4) Mercy Hospital, Grayling, Michigan; (5) Becton-Dickinson & Co., Columbus, Nebraska; (6) Mohawk Tool & Die Works, Montpelier, Ohio; (7) Kapiolani Motors, Honolulu, Hawaii; (8) West Virginia Gas Co., Ashland, Kentucky; (9) International Paper Co., Reedsport, Oregon; (10) Collins Construction Co., Port Lavaca, Texas.

LEICH SALES CORPORATION • 427 WEST RANDOLPH STREET • CHICAGO 6, ILLINOIS

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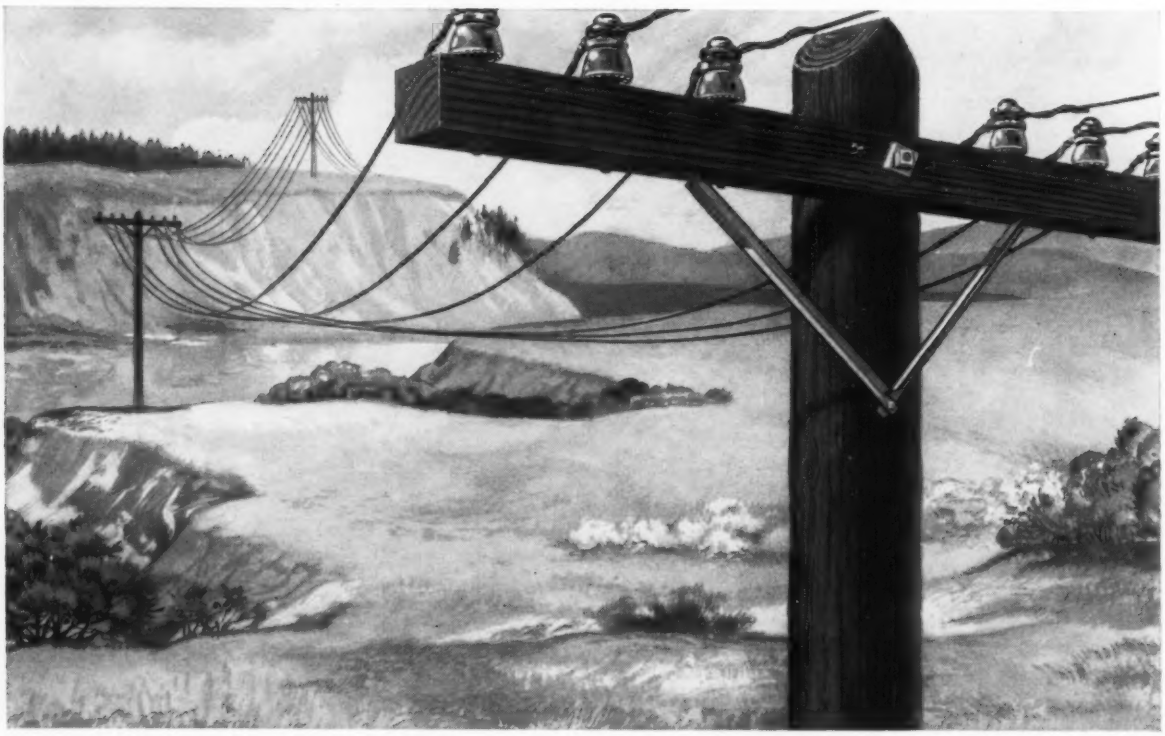
manufacturers of telephones, switchboards and related apparatus since 1907

Tiger Brand Amertel 195 offers improved voice transmission efficiency... makes possible spans 700 feet long!



USS Amertel 195 has the physical and electrical characteristics to give it transmission efficiency higher than any other galvanized steel telephone wire. The AC resistance of USS Amertel in the audio frequency range is well below that of standard BB wire, greatly improving voice transmission quality.

Amertel 195 is so much stronger than ordinary BB wire that it makes practical longer rural line spans. In Light Loading districts spans up to 700 feet are possible. Spans may reach 650 feet in Medium Loading, and 600 feet in Heavy Loading.

These extra-long spans result in greatly reduced costs for every mile of line strung:

- *Fewer poles are required, with savings in man-hours, hauling, pole digging and installation.*
- *Telephone wire can be installed on rural power line poles without the use of intermediate supporting poles.*
- *Rural lines can readily be strung over rivers, gullies or other places where long spans are necessary.*

USS Amertel's superior strength enables it to stand up under severe weather conditions. Heavy ice loads may stretch USS Amertel 195 clear to the ground, but when the ice melts the Amertel line will return to its position in the air.

Send for free new Amertel Booklet. Just off the press, this new booklet tells all about USS Amertel 195 Telephone Line Wire. To get your free copy, just write to American Steel & Wire, Rockefeller Building, Cleveland 13, Ohio. Complete information is also included on USS Amerstrand Guy Wire.

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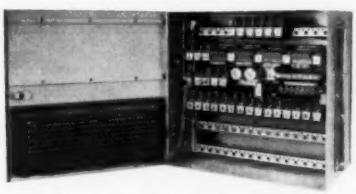
The Ultimate Goal of the Direct Distant Dialing Program

Universal 100% Toll Computer Intercept is the *only* intercept that can be installed in a toll center to serve outlying offices. May also be installed in end offices to serve subscribers.

Other ***UNIVERSAL*** Equipment:
Code-to-Selective **RINGING CONVERTER**
DIGIT ABSORBER
TRUNK DIGIT REGISTER



Cabinet 19" x 17" x 8" for rack or wall mounting, 60 lines TPL illustrated.

Cabinet 84" x 36" x 12", capacity 40,000 stations, TPL or TPS or any combination of both.

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OR CONSULT YOUR DISTRIBUTOR
FOR DETAILS

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with Telephone Companies, Pioneers and Off-Duty Groups for

AWARDS • PRESTIGE GIFTS • PROFIT MAKERS

Nine Colors

PHONETTE EVERGLIDE

BR#21

Scale model, equipped with Pen and Paperweight Base.

Gift Boxed **$1.35**

Improved—Lower Prices

PHONETTE SHEAFFER

BR#22

Scale model, equipped with SHEAFFER DESK PEN and Paperweight Base.

Gift Boxed **$2.45**

New

SYMPHONETTE EVERGLIDE

BR#23

Equipped with Pen and SWISS Music Box.

Gift Boxed **$3.35**

Improved-Lower Prices

SYMPHONETTE SHEAFFER

BR#24

Equipped with SHEAFFER Pen and SWISS Music Box.

Gift Boxed **$4.45**

PHONETTE MUSIC BR#25

Miniature equipped with SWISS Music Box. Choice of tunes and Colors.

Gift Boxed **$2.95**

MINIATURES

BR#26 Miniature only

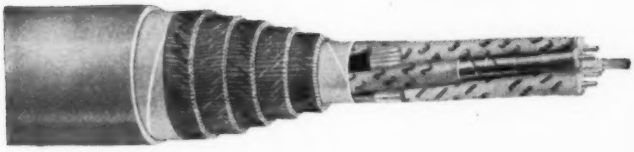
BR#27 Miniature with Paperweight Base assembled.

Both Gift Boxed.

BR#26 **80c** BR#27 **$1.05**

NEW...JUNIOR ACHIEVEMENT Do-It-Yourself Kit. Write for details.

IMPORTANT: f.o.b. factory. Open Account. Prices quoted are for 96 pieces. Available in quantities as low as 6. Samples — Sent on request. May be returned for credit. For complete price information on these and other custom designed items for the telephone industry, write or telephone for our Free Catalog.



Composite Co-axial and Audio Long Distance Telephone Cable

60 Channel 14 Pair Carrier Telephone Cable

Paper Insulated Audio Star Quad Long Distance Telephone Cable

Telephone Cables for every type of LONG DISTANCE SYSTEM designed, manufactured and installed by

BICC

Branches and Agents throughout the World

BI Callender's

BRITISH INSULATED CALLENDER'S CABLES LIMITED 21 Bloomsbury Street, London, W.C.1

CONTRACTORS – Management's Decision

By PAUL M. HENKELS

Recession Over – Expansion Ahead?

Now that the recession is over and business is on the upturn, it might be well to reappraise labor policies from the management point of view.

Many manufacturing firms consider labor policy as union versus management and concern themselves with contracts embodying wages, fringes, hirings, firings, seniority, etc. However, many other businesses, including utilities, can consider another factor — Contract Labor.

During the recession, we saw great emphasis on cost control. That well-publicized "close second look" was given to everything. In the first stages of the recession, capital expenditures were cut through reduced inventories, postponement of office improvements and curtailment of expansion programs. In the second stage, operating expenses were cut through such measures as reduced maintenance and personnel layoffs. Many companies that were used to years of almost uninterrupted expansion were forced to lay off people for the first time since Korea. Numbered among these were many telephone utilities.

Now things are picking up again. Laid off personnel are being rehired. Soon, all that were laid off and want to come back will be back. More will then be needed. How many? For how long? Will it be continuous or temporary? This brings us around to basic policy decisions.

Utilities As Citizens

The utility is *the* solid citizen of the community. It renders a useful service. It employs good people. It pays good wages. It contributes leaders to community projects. It furnishes steady employment. It pays taxes. It makes a profit.

Security is a prime attraction to prospective telephone company employees. A job with the company is always a steady job. How then to handle cyclical work loads without jeopardizing the company's reputation as an employer?

Enter the Contractor

Many companies today are using contractors as a regular factor in their operations. By doing so, they reap many benefits. Chief among these are stabilized employment, reduced unemployment insurance rates, less turnover. The reduction in turnover has several interesting aspects. By taking the pressure off the personnel department to man a particular situation, better screening can be given prospective employees. Better screening means higher quality men, better suited to the job. Since approximately 85% of every operating expense dollar goes to personnel, screening and turnover become very important operating considerations.

The Union Objects

Does the union object to the employment of contractors? Occasionally, but not as often as supposed. And it is our experience that these objections are generally not as strenuous as feared. Proper selling by progressive management can retain managements' prerogative to use contractors. Steady employment and qualified help are the main selling points.

A Labor Policy

Therefore, in the coming expansion, the lessons of the past recession might well be reviewed in the establishment of a broad labor policy. We are convinced that contractors should have a place in that policy. The soundness of economy, flexibility and stability point this out. We naturally feel that when contractors are considered, Henkels & McCoy should be among those considered. May we discuss this further with you? Henkels & McCoy, 6100 North 20th Street, Philadelphia 38, Pa., VIctor 3-7000 and 1800 Johnson Street, Elkhart, Indiana, 2-5650 and 2-8882.

Advertisement

IN THE NATION'S CAPITAL

BY FRANCIS X. WELCH, WASHINGTON EDITOR

Movement to share the revenues from federal telephone excise tax between Washington and state governments revived. Bell System and USITA file briefs with FCC opposing radio manufacturers request that telephone industry's mobile radio operations be investigated. IRS agrees to review ruling on utility advertising expenses bearing on public ownership

THE TELEPHONE industry is being steadily maneuvered by the federal and state politicians into a position just back of the eight ball, as far as the future of telephone excise taxes is concerned. As all readers of this department well know, the industry has been hoping and praying for, and doing all it can to bring about, some reconsideration of these burdensome federal taxes on telephone service. Last year, the emphasis was on a movement to persuade Congress to do away, in whole or in part, with these taxes—originally set up as an emergency measure and later continued as a wartime necessity.

Then came Sputnik and the galloping increase in federal defense and national security expenditures, with a rising tide of red ink on Uncle Sam's budget book. This meant the abandonment, temporarily, of any idea for the actual repeal of the telephone excises. But, there persisted the hope that Congress could at least be persuaded to set some kind of a termination date in the future.

Then came the proposal in the recent session of Congress to have the federal government turn over 4 per cent out of the 10 per cent which it collects on local telephone bills to the states. In return for this the states would assume the responsibility for vocational training and sewage treatment construction for which they now receive federal grants. The telephone industry rightly surmised that if such a "share-the-tax" movement was actually adopted the telephone excise tax would be permanently frozen into the national tax structure, at least at the state level. The state legislatures have rarely, if ever, repealed a tax as long as it was producing substantial revenues.

But the share-the-tax movement, promoted by the Federal-State Action Committee, made slight progress at the recent session of Congress because most of the states found that they would not do as well by surrendering their federal grants for vocational education and waste treatment expenditures in return for 4 per cent of the federal tax collections on local telephone bills. For this reason, the telephone industry had some encouragement in its efforts to block the share-the-tax movement, which has become such a burden on telephone subscribers throughout the nation.

Now, comes a streamed-line version of the share-the-tax movement, and it seems to be sugar-coated in such expert fashion that Congress may well gobble it down at its next session. The latest revision of this proposal came out of a meeting of the Federal-State Action Committee at Hanover, N. H., on Sept. 9. This committee—composed of the Secretary of the Treasury and a bipartisan panel of state governors from New Hampshire, Florida, Maryland, and Nebraska—turned in a good job, from their point of view.

The committee worked on the idea of removing the objections which the so-called "poor" states had to the original proposal for turning over to the states a flat uniform percentage of Uncle Sam's "take" on the local telephone bill tax. The new proposal provides a formula whereby even the poorest states would receive tax money in excess of the amount they now receive in federal grants for vocational education and waste treatment projects. This is done by using the old Robin Hood formula of taking a little from the richer states and giving it to the poorer states.

U. S. Treasury Secretary Anderson says that the proposal has the endorsement of the administration and that he expects that it will gain much wider and stronger support in the next session of Congress. He may be right, unless somebody can think up some good answers between now and next January to this question — "Why not perpetually tax the telephone subscriber to pay for federal and state government operations?"

The new proposal would work something like this: (1) There would be a basic or minimum tax credit for each state of 3 per cent of the current federal tax of 10 per cent collected within its borders on local telephone bills. The states must levy a state tax of 3 per cent on telephone bills before the government relinquishes its revenue in that amount; (2) there would be provided authority for the United States Treasury to distribute the revenue equivalent of an additional 1 per cent of its 10 per cent levy on local telephone bills. This revenue, amounting to 36.9 million dollars would be distributed among the 31 states for whom the 3 per cent tax credit would fall short of the money they now receive in federal grants for the two programs.

This would work out as follows: Eleven states would receive only the 3 per cent tax credit. But, they still would enjoy surpluses above their current grants ranging from 50 per cent in Washington state to 220 per cent in New York. The others are: California, 201.2; Connecticut, 63.8; Illinois, 134; Maryland, 54.1; Massachusetts, 115.1;

Michigan, 80.7; New Jersey, 128.6; Ohio, 71.7, and Pennsylvania, 59.

The other, or "poorer" states, would share in the excess of 1 per cent (over the basic 3 per cent distribution to the "richer" states) collected on local service all over the entire country.

Secretary Anderson described the new proposal as a five-year program at the end of which the federal tax on local telephone service would be reduced from 10 per cent to 6 per cent. By then, he said, it is contemplated that all the states will have levied state telephone taxes or provided other revenues to finance the two programs for which they would have full responsibility.

The federal government would give up 147 million dollars in annual revenue. But, it would save $86,525,500 in grants, making a net loss of $60,474,500. Maybe, here, is a good argument for the telephone industry to get busy on.

One other small straw in the wind, which seemed to be flying in the opposite direction from the share-the-tax movement, was a report recently released by the House Government Operations Committee. This House of Representatives group, in its annual report on federal-state-local relations, took occasion to comment on the work of the Federal-State Action Committee. Commenting specifically on the proposal to shift part of the federal excise tax collections on local telephone service to the states in return for state acceptance of responsibility for programs now subsidized by the federal government, the House Government Operations Committee said the idea was "intriguing" but "impracticable."

The House committee pointed out that (at that time) the share-the-tax scheme would have a burdensome effect on the lower income states, which would lose more in grants than they would gain in tax revenue. But, the recent revision of the share-the-tax proposal would seem to answer that objection.

Nobody in Congress (to date at least) seems to be much impressed by the fact that the share-the-tax proposal is an effort to tax, on a permanent basis, all telephone subscribers in order to pay for government expenditures which have nothing whatever to do with the use of the telephone. A federal sales tax on purchases of food, clothing, or other necessities by the general public would be equally objectionable. In other words, this federal tax, which was first justified as an emergency, and later as a "temporary" war measure, has now become an out-and-out money grubbing operation, simply because telephone companies happen to be such excellent tax collectors and (what is most important) the money is there to be collected.

Plagued by his deficits, Uncle Sam seems to be no longer concerned about tax justification. His major preoccupation now seems to be tax realization, from whatever sources can be tapped —the more the better.

Mobile Radio Probe Hit

The Bell System and the United States Independent Telephone Association have joined hands in resisting efforts of Motorola, Inc., and several other manufacturers of mobile radio equipment, to have the Federal Communications Commission investigate telephone company operations in the mobile radio field. The Bell System, in a reply statement to the FCC, resented the radio manufacturers' effort to pin the monopoly tag on the Bell companies. On the contrary, the American Telephone & Telegraph Co., in its statement, saw in this proceeding an organized effort "to oust the telephone companies from the mobile communications field." The Motorola petition was called "an unfounded attack on the telephone industry in the United States."

The AT&T's reply brief gave other reasons why the Bell System thinks the proposed FCC mobile radio investigation is unnecessary. First of all, it was pointed out that every time a telephone company gets an authorization from the FCC to use radio frequencies for mobile operations, such authorization is granted only after a specific finding has been made that the proposed operation is in the public interest, convenience, and necessity. Furthermore, it was noted that there was no mystery about telephone company operations in this field. These are all a matter of public record, which can be inspected in the commission's application files and in a form of various reports which the telephone companies must make periodically concerning their operations.

Another reason given was the multiplicity of FCC proceedings in this area. Already coming up is the promised hearings by the FCC growing out of its studies of frequencies between 25 and 890 megacycles. This should produce, in the view of the Bell System, any additional technical, economical, or legal information which might be needed to clarify the status of telephone company operations in the mobile radio field. Why, then, harass the telephone companies with the necessity for duplicating such procedures?

The USITA's reply statement pointed to one aspect of this controversy which is frequently overlooked. And, it is an aspect which appears to cut the ground from under the manufacturers' argument that the Bell System is trying to get a telephone industry monopoly in the mobile radio field. The USITA statement takes pains to point out, as it has so often had to do in the past, that the Bell System and the telephone industry are not the same.

Whatever monopolistic characteristics the Bell System operations might have in the eyes of the complaining radio manufacturers, certainly nothing of the sort could be said or even suggested with respect to Independent radio operations in the mobile radio field.

The USITA's statement specifically mentions a total of 66 Independent telephone companies licensed to engage in mobile radio service in the United States. The USITA charged that the Motorola petition had entirely overlooked, or preferred to ignore, the actual substantial operations of Independent companies in furnishing mobile radio services. And, so, the Independent group concluded, while the Bell System is the primary target of the Motorola petition, it is "in reality an attack on the position in the mobile radio field of the entire telephone industry."

One point made in the Bell System's reply brief was in opposition to Motorola's demand that all mobile radio-telephone services be interconnected with the general telephone exchange and toll network of the telephone companies. The Bell System said that it opposed the "indiscriminate interconnection" of Bell company exchanges and toll facilities with the lines, signals, or other telephone facilities, or operations independently conducted, which would result in a "wasteful duplication" of service. It was further pointed out that the radio manufacturers had admitted that they did not have any evidence pointing to a need for such "indiscriminate interconnection."

Utility Advertising

It should be of passing interest to telephone companies that the Internal Revenue Service (IRS) has agreed to reconsider its advertising expense ruling. Since the informal ruling of IRS Commissioner Harrington last February—to the effect that the expense of utility advertising bearing on public ownership legislation should not be deductible as a business expense — the electric utility companies have been very busy seeking to obtain a reconsideration. Commissioner Harrington's position was stated in a letter responding to an inquiry from Senator Kefauver (D., Tenn.). Spokesmen for the IRS have taken the position that there is nothing new in this, and that the service was simply following a regulation of long standing which prohibits the de-

(Please turn to page 37)

Dial Switching of Toll Circuits

Transmission considerations from DDD Standpoint

By J. N. PETRIE*

BY THE VERY nature of telephone traffic any telephone subscriber may wish to be connected to any other subscriber in a continental area or possibly anywhere in the world. This implies switching of connections. It also implies switching these connections at more than one point, since it would be economically impracticable to concentrate all switching operations at one point for even a single metropolitan area. With subscriber line switching on a decentralized basis, it naturally follows that switching centers themselves must be switched in order to accomplish economical interconnection of any two telephone subscribers.

Requirements for switching have been set up on the basis of the systematic plan which has been in effect for many years and is most commonly known in the commercial telephone communications industry as the "general toll switching plan." We will not go into the details of this plan except to point out that the present version of it presupposes assigning every telephone exchange into one of five classes.

Fig. 1 (Copy of Chart 3, Sec. VI, "Notes on Distance Dialing—1956"—AT&T Co.) shows the class designations and relationships as well as the different paths which might be involved when subscribers in two different offices communicate with each other. If these are Class 5, a total of eight switches or nine circuits (not counting the subscriber lines) may be involved. The operation of telephone connections, involving several switches, presents some challenging problems. I shall confine my remarks to only one of these problems—that of meeting the transmission requirements.

Transmission Requirements

The effective and satisfactory transmission of speech depends, among other things, on the attenuation between the telephone sets involved in a connection, the noise on the circuits, the crosstalk from other circuits, the echo on the connection, the bandwidth of frequencies transmitted, and the noise level at the point of transmission and reception (or more precisely, the accoustic con-

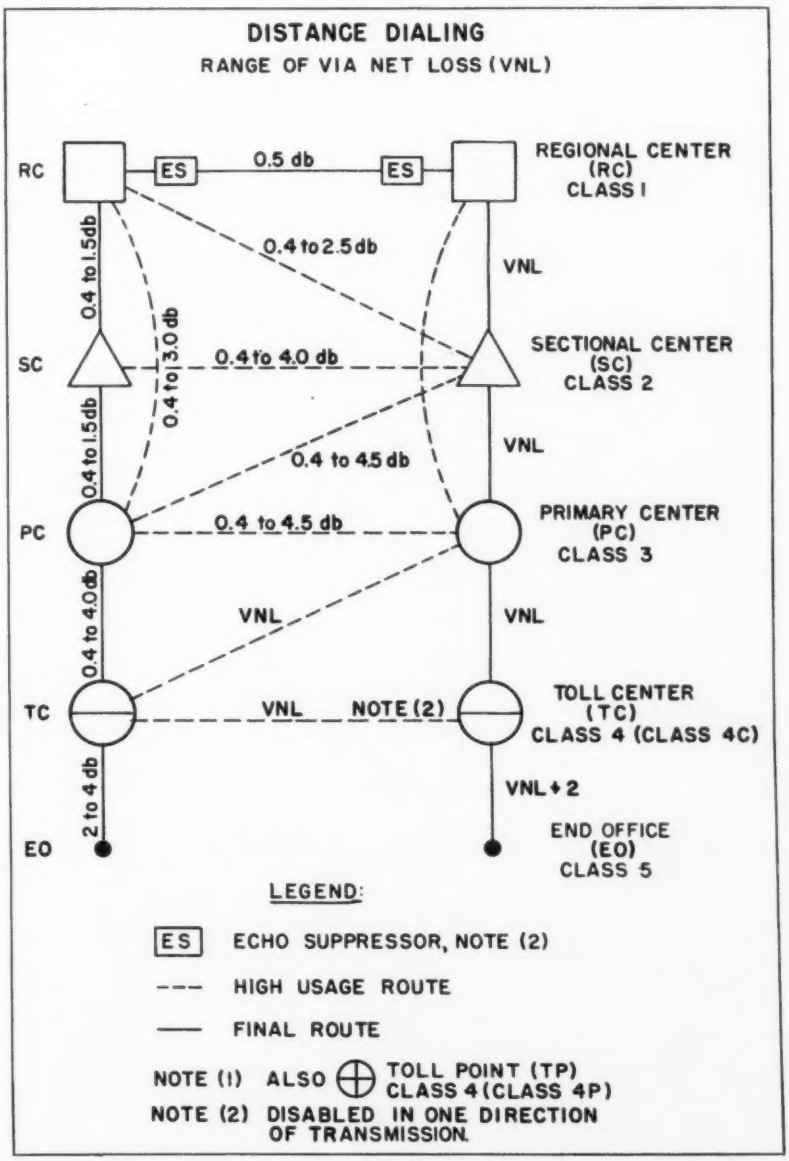
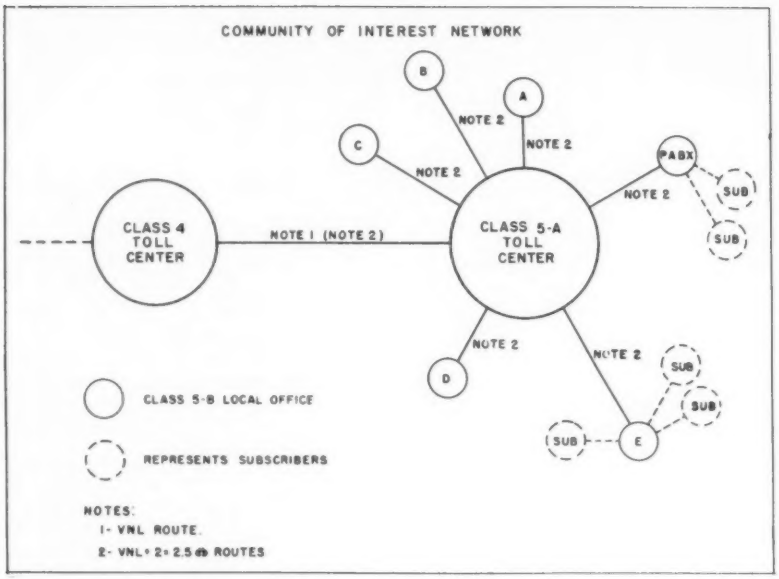


Fig. 1

*Mr. Petrie is Chief Transmission Engineer of Automatic Electric Co. He presented this paper at the Winter Meeting of American Institute of Electrical Engineers, February 2 to 7, 1958 in New York City.



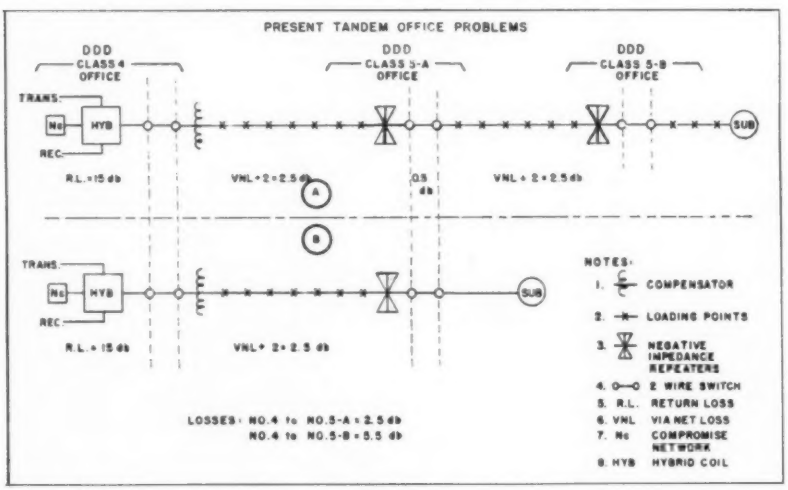
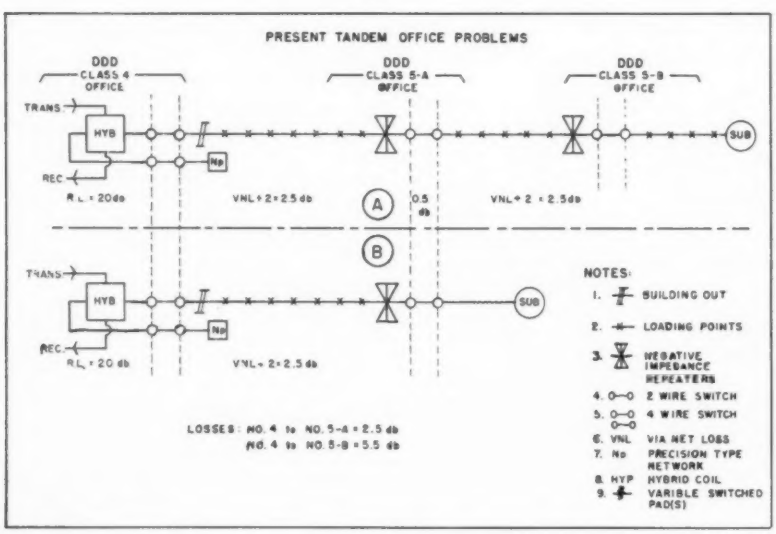


Fig. 3



←Fig. 2

ditions surrounding the speaker and the listener).

In modern long distance telephone circuits, the major factors contributing to the quality of a connection, from a transmission point of view, are attenuation and echo. These factors are to a large extent dependent on the "return loss" obtainable at two-wire switching points. Return loss is primarily a measure of the degree of balance existing at the hybrid coils (which are invariably involved in these connections) and, therefore, is an indication of the magnitude of the echo which may be expected. On connections having low attenuation the echo tends to be even more noticeable.

The problem of complying with transmission requirements of the general toll switching plan, and also fitting into classifications established for them, is particularly difficult for many Independent telephone companies.

Fig. 2 shows the network arrangement quite typical of many such operating companies. Also, *Fig. 2* indicates our idea as to how additional coding for "tandem" switching centers can be accomplished without changing the basic design objective or concept of the general toll switching plan. Basically, the concept of a 5A and 5B office is introduced.

Presently, the several offices designated as A, B, C, D, and E, etc., in *Fig. 2* would be designated as Class 5 offices and have direct trunks to a Class 4 office. The requirement, however, is contrary to the practices of many companies which desire to operate what might be termed "countrywide" networks and, for economic reasons, would not wish to provide direct circuits from the several offices such as A, B, C, D, and E to the Class 4 office.

Alternatively, all offices classed above A, B, C, D, etc. (end-offices), would necessarily have to be upgraded from a Class 5 to Class 4, Class 4 to Class 3, etc., according to the current general toll switching plan. This would be a distinct hardship, especially on the Bell System.

The switching of telephone circuits at a "tandem" office, designated as the No. 5-A office, presents a number of important and difficult transmission problems when working into the nationwide Direct Distance Dialing (DDD) network. Also, some engineers believe that service rendered through PBX's is fundamentally similar to that rendered

←Fig. 4

through "tandem" switching offices. Certainly, PBX's constitute a special transmission problem unless they are to have long distance trunks direct to toll centers rather than to their own end-offices. From a transmission standpoint, PBX's do constitute the same problem as the outlying offices previously designated by the letters A, B, C, and D, and, therefore, are in the same category.

Nature of Circuits

Telephone conversations are bi-directional or duplex in nature; that is to say, conversation must be possible in either direction over a single connection and reversible at will without any delay or noticeable interference to the talkers. To meet this requirement, it would be highly desirable to have available seperate one-way circuits for each direction of transmission, each equipped with a transmitter at one end and a receiver at the other end, thus providing for two-way conversation at all times, and at a loudness level limited only by the amount of amplification introduced in the respective one-way transmission paths.

Carrier channels, which are used extensively for long distance telephone purposes, do provide bi-directional full duplex (or what are more commonly known as four-wire) circuits. By the provision of suitable four-wire local trunks and subscriber loops, we could achieve the objective of an over-all four-wire transmission path. Such a solution would be very desirable from a transmission point of view, but may be unduly expensive and certainly could not be justified at this time.

Since, today, the subscriber loop, and most local trunks, are still on a two-wire basis, and probably will remain so for some time to come, it is necessary to convert from two-wire to four-wire operation at two-wire toll switching points. Such a conversion from two-wire to four-wire and back to two-wire at the far end involves at least two such conversions in each built-up connection. To accomplish this transformation from two-wire to four-wire facilities requires the use of hybrid coils with associated balancing networks simulating the connecting two-wire facilities.

The general toll switching plan referred to above is based on extensive use of four-wire long distance circuits, and four-wire switching whenever economically feasible. No doubt, ultimately, all of the long distance circuits and trunk circuits will be carrier derived, and four-wire switching will become more popular, so that the desirable characteristics of four-wire operation can be achieved. Actually, two-wire

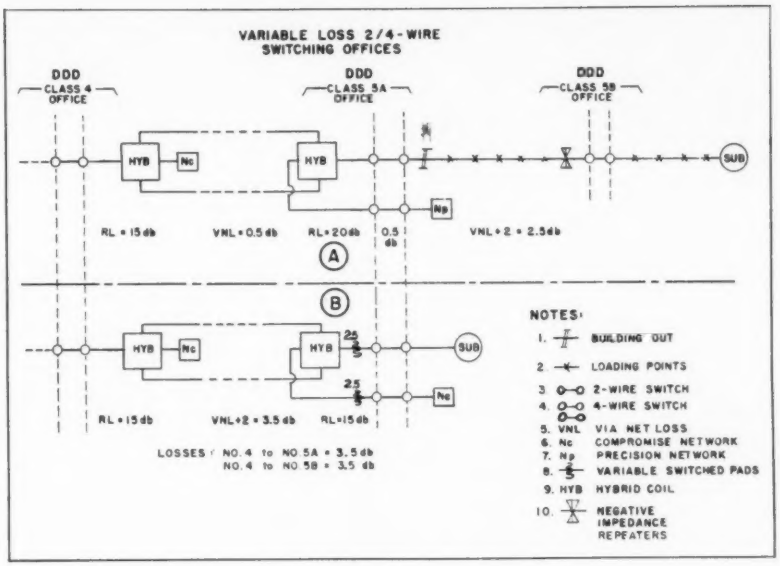


Fig. 5

switching offices will be with us for years to come, however, it would still be desirable to take advantage of the favorable characteristics of four-wire toll switching while retaining the two-wire local circuitry and equipment.

Requirements for Two-Wire

Experience indicates that when a 27 db return loss between circuits is attained at a two-wire switching office, for all intents and purposes, the performance will be comparable to that of a four-wire switching arrangement. However, this involves a considerable initial expenditure and continuing effort and expense to maintain the degree of precision and control over the plant facilities found necessary in order to retain the 27 db return loss objective. At points where the four-wire facilities are equally switched to two-wire end-links, a 15 db return loss will usually be adequate.

Recent Four-Wire Development

One of the recent developments which combines the features of four-wire automatic switching, yet retains most of the economies inherent in two-wire switching arrangements, is the FW-1 type switching systems* developed by Automatic Electric Co. The present

*The hybrid coil connections used in the FW-1 switching system are the subject of U. S. Patent #1,465,298, issued to George Crissom and A. F. Rose in 1923.

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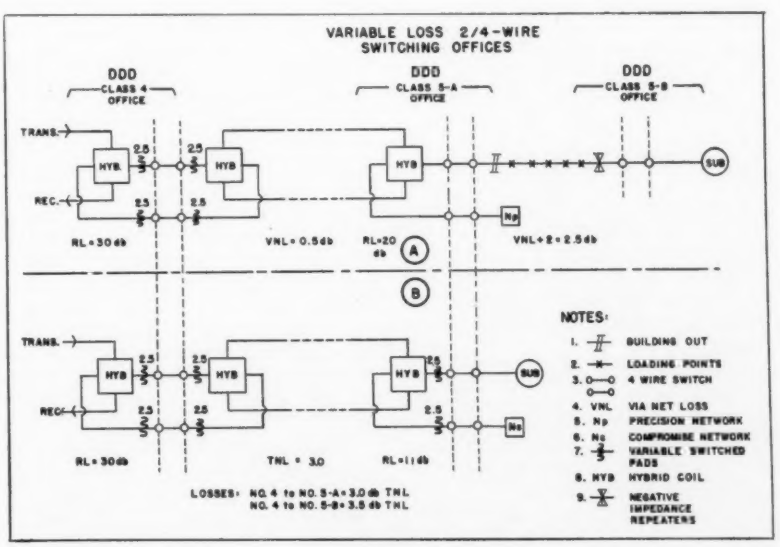


Fig. 6

Merchandising

Needs the Scientific Method

By JAMES W. COOK*

IT IS A real pleasure for me to have this opportunity to talk to an engineering group, especially to one with such a keen interest in the management skills and techniques that exist outside the field of engineering. I have in my time known some engineers to act as if the very word "technique" belonged exclusively to the trained engineer. I am sure none of you would entertain such an idea. Otherwise you would not have come to listen to me speak of merchandising and of the techniques needed by merchandisers to make their contribution to business operations increasingly effective.

Recently in New York an eminent jurist urged a convention of doctors to broaden their horizons by studying and understanding the world that lies beyond the world of medicine—that they would be better doctors for it. He might have said the same to you—or to me! You are better engineers to the extent you understand and identify yourselves with these other fields of management that you influence and from whose influence you cannot escape, however much you might like to. It may well be that the most important of these influences is the field of merchandising. And, I venture to say, too, that it can be one of the most stimulating of all interests to the engineer who thinks creatively and responds to challenge.

Speaking of influence, I think we are all affected by the popular literature of the day and by what we read in the daily papers. If so you could easily get the impression that all engineers are the legitimate heirs and assigns of Copernicus, and Galileo, and Newton. And, that all merchandisers are dilettantes in gray flannel suits.

Must Work Together

Neither of these impressions can fairly be applied to the thousands upon thousands of engineers and merchandisers in industry today. Both groups contribute significantly to our economic progress. And, each one is an indispensable complement to the other. The merchandiser can profit immensely from working more closely with the engineer and by adopting his scientific method of research. Conversely, the engineer would benefit from such a working arrangement because all of his effort, aside from pure research, is to produce goods and services which can be readily merchandised. I want to demonstrate that this kind of relationship and greater use of the scientific method in trying to solve basic merchandising problems is the real key to sound, yet dynamic marketing.

In the telephone industry, we have always thought of ourselves and spoken of ourselves as an engineering business. This is not surprising. We are the inheritors of one of the most useful scientific discoveries of our age, and of the numerous engineering processes to which it has given rise. And, yet, I would remind you that the two men who started the telephone on its way—Bell the scientist, and Watson the engineer—had no sooner put together a device that talked than they were forced to pursue the art of merchandising before anyone else would take their gadget seriously or invest any money in it.

Bell exhibited his telephone at the Centennial Exposition in Philadelphia in 1876. The medal he won for his scientific achievement got little acclaim. But the Emperor of Brazil hit the world's headlines with the astonished outburst: "My God, it talks." A little while later Watson, accompanied by a cornet, sang "Do not trust him, gentle lady," into a telephone in New Jersey while Bell demonstrated the other end of the line to an incredulous audience of prospective customers in New York. These tactics, which some people today might characterize as huckstering, may seem unworthy of so dignified a profession as engineering. Nevertheless, they were necessary to put the telephone across, and its success since that time has given employment to countless thousands of engineers and merchandisers.

Bell and Watson ran counter to the popular philosophy of their day— that if you built a better mousetrap the world would beat a path to your door. They found out the hard way that the world is not given to path-beating. We have been finding it out the hard way ever since. Only in recent years has industrial management, telephone included, been waking up to the fact that a scientific approach to the market has become as useful as a scientific approach to the product. When we invent something and only then look around for a market, we put the cart before the horse. Nowadays, progressive management examines the market first, then looks to the engineer to make the things the market wants and needs.

Scientific Method

The awakening I refer to is due in part to the introduction of the scientific method into the bloodstream of the industrial corporation. If I understand

*Mr. Cook is Vice President—Merchandising of the American Telephone & Telegraph Co. He gave this address at recent meeting of the Philadelphia Section, Management Division, American Institute of Electrical Engineers.

what the engineer means, the scientific method is painstaking and exhaustive search for truth in the natural sciences through rigidly controlled experimentation. For hundreds of years this procedure was confined mostly to the universities. A generation or two ago industry began to adapt the scientific method to its own purposes. Its use expanded as more and more companies launched research programs to maintain or improve their competitive position. Today, no large corporation can keep pace without it. I have been told American industry is now spending about 8 billion dollars annually for scientific research and development. The Bell Telephone Laboratories figure alone, excluding the work for the military, is over 90 million dollars. But, the results have been so consistently rewarding that no one begrudges the spending for this purpose.

Now the scientific method involves much more than coming up with a dry recital of facts and figures. The true scientist must see—and make others see—the significance of these truths. He must dream dreams and create visions of what might be built on these truths. And, then some engineer must come along and, with one eye on the scientist's truths and dreams and the other on the market-place, help make these visions come true.

A tremendous amount of making visions come true has been accomplished by industry since it adopted the scientific method. The concentration on finding new things and new ways to use old things has been intense. And, the findings have been so plentiful and so much has been made available to the American people that we have had great difficulty digesting it all. We are like Pat McGinty, fresh from the ould sod and confronted with a French menu in a New York restaurant. Pat began pointing with his fork, and the waiter brought in a succession of consommes and potages, followed by a large chunk of steak. But Pat was unequal to the occasion and exclaimed: "Here am I, Patrick O. McGinty, the opportunity of me life before me, and I'm full o' soup."

The American economy has often found itself in this uncomfortable situation. The reason is that we merchandisers have not yet learned how to adjust consumption to the production you engineers have made possible. There is no lack of products or of the skills to make them. Our lack is in the knowledge of what products to make, how many to make, how to distribute them and, in some cases, how to use them after they are distributed. From all this, we conclude—some of us at least—that we have to study the capacity and the limitations of our own digestive system no less than the preparation of exotic dishes in our electronic kitchens.

Leveling of Economy

This brings us to the question those of us who have to lug the trays must address to those who build the kitchens and prepare the food. How—says the merchandiser to the engineer—can we apply to the job we have to do the same principles of basic and applied research that have worked so well in your case? May it not be that American business must begin to invest in the psychologist, the economist, the statistician, as you have already taught us to invest in the phsysicist, the chemist and the metallurgist?

"THERE'S ONLY ONE REAL BARGAIN HERE!"

Some of us think the answer is an unquestioned "yes." We believe that, by working together, trained men in these fields can speed the effective and profitable introduction of new products very substantially; also, that they can help point the way to levelling off the sharp dips and rises in the economy that seem to plague industry every few years.

Just consider the time lag that exists between the day you lay your models and manufacturing specifications on our desks and the day we manage to get them into serviceable and profitable use. Television, for example, was technically possible in the late 20's—not bug-proof, of course, but potentially marketable. It was the late 40's before the public had it. The most recent development, color TV, is making progress, but quite slowly. The physicist, the chemist, and others have done their part. The engineer is standing by. But, until a way is found to solve some very complex marketing problems, public enjoyment of this attractive entertainment medium will be rather limited.

Dial Service is Example

This time lag is apparent in the introduction of almost every new device or service you engineers make possible. Dial telephone service is an excellent example of this. The dial system itself was a practical scientific accomplishment more than half a century ago. Yet, even today, we are not completely dial, though we are past the 90 per cent mark. Why? The answer is we moved just as fast as we could, which means we kept pace with our success in solving some of the very important human relations and economic problems involved. Where we are as of now simply means we still have some of these problems left to be solved.

Looking back, I would say we have gone through three different cycles. In the early days, it took a while to overcome public distrust of the mechanical marvel. The automobile people, among others, had this same problem of trying to convince the public that the new product would be superior to what it replaced. At about the time when the dial system had firmly established itself and more and more communities were getting eager for a changeover, the depression threw a resounding economic block at our hard running product. The program lost momentum, though it never quite came to a dead stop.

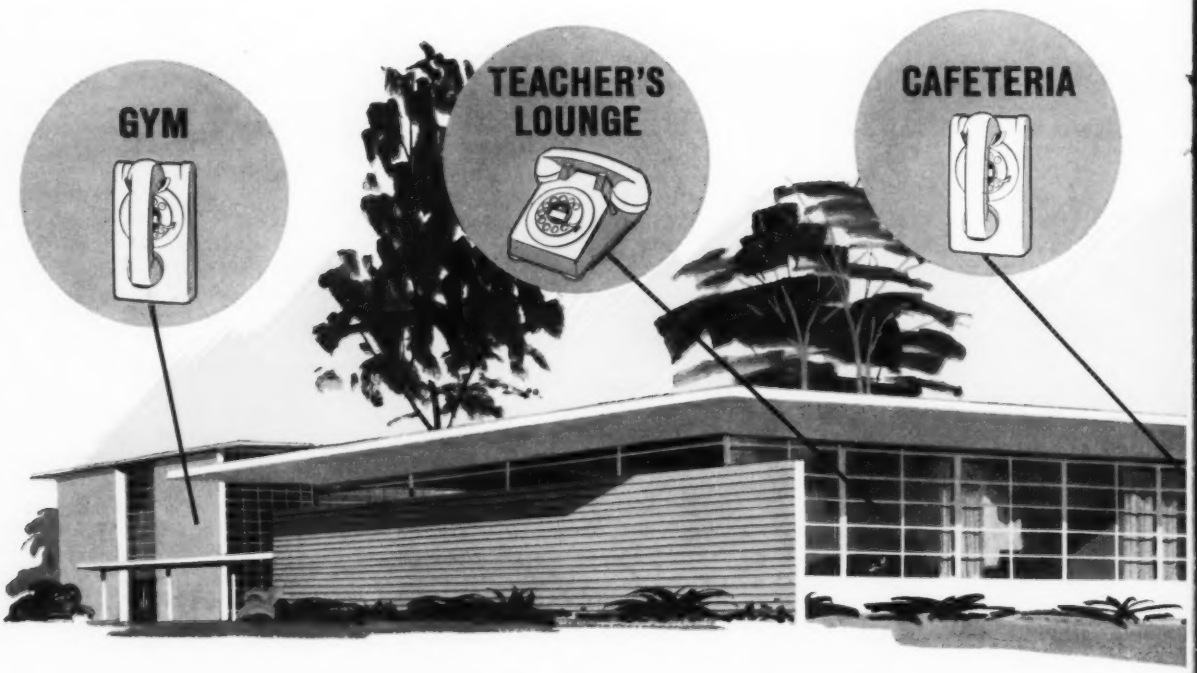
Finally, in the post World War II period, we were taken by surprise by the country's seemingly insatiable appetite for more and more telephone service. Most of industry had this same experience. The pent-up demand for all kinds of goods and services was enormous. The postwar boom has been so well documented, I won't take the time here to pin point the problems it produced.

But, through all these years, the scientists and engineers kept right on improving the product and making it more and more attractive. Shortly after the war a new concept of dial service became possible through their development of DDD (Direct Distance Dialing). And, now, we are all looking ahead to the field trial early in 1960 of the first electronic (telephone) switching system—a much faster and far more versatile system than anything we have ever had before.

What concerns us are the limitations of the human brains and hands that must put these systems to work. Some of us are wondering whether from the very outset, we should have paralleled our rigidly controlled engineering ex-

(Please turn to page 42)

Kellogg Color Phones Fit In



15 Decorative Colors Match Business, School or Home Decors

Bright color schemes are the highlight of today's modern business, school and home interiors. Sparkling colors liven our daily tasks, make them pleasant to perform. Kellogg color telephones play an important part in this picture. The 15 bright new colors of the K-500 series, available in both desk and wall models, will complement any decorative scheme, make the telephone even more pleasurable to use.

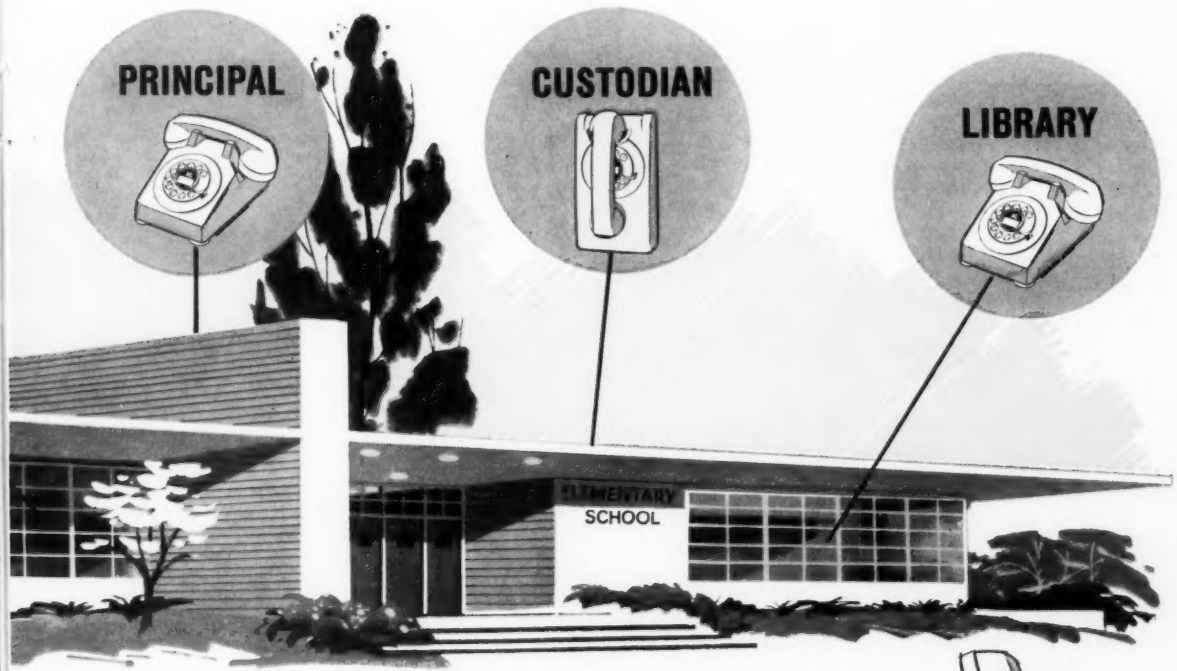
You'll find that this wide range of sparkling colors will help you sell more extension phones, whether your prospect is a business man, school administrator or housewife.

Kellogg is helping you sell more color phones through its widely-promoted color campaign. The theme—"Brighten Life At Home With Color Phones!"—is being brought to the attention of people everywhere through advertising in national magazines, local newspapers, direct mail and other powerful sales promotion tools.

Your Kellogg sales representative will be glad to explain this campaign to you and show you how it can be brought into operation in your community.

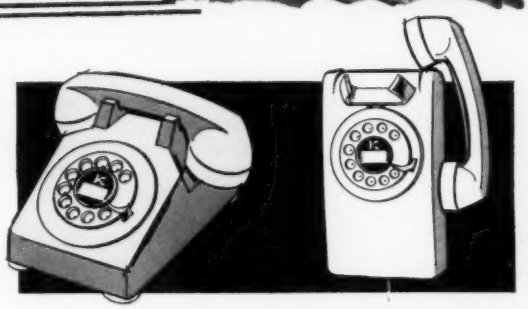
Kellogg Switchboard and Supply Company, 6650 So. Cicero Ave., Chicago 38, Ill. Communications Division of International Telephone and Telegraph Corporation.

Any Picture!



red, yellow, green, blue, beige, gray, ivory, turquoise, rose pink, aqua blue, light beige, light gray, white, brown, black.

Demonstrate how the handset can be hung without need to break the circuit!



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TROUBLE CLEARING

Learning and Memory

By L. N. MARTIN

ONE MONDAY morning the teacher told little Johnny that Friday afternoon everyone would recite a speech and she assigned Johnny a poem which occupied about a page of large type.

It was to be Johnny's first experience in this connection, but he set about it bravely. He read the poem very carefully but could not remember even the first line. He read it again more slowly thinking that he would surely remember that first line.

However, as he read on, the first line slipped completely out of his mind. He became worried, and, after school, he took the problem home to his mother who fortunately knew some of the principles of learning and teaching.

His mother said: "Now Johnny don't worry. This is going to be fun. All we have to do now is to learn that first line."

She read the line aloud and explained its meaning. (Appealing to reason as well as to memory.) She then had Johnny read it aloud. (Using sound as well as sight to reach Johnny's mind.) Johnny now had no trouble remembering the line and he repeated it several times without error. (The impression on the brain is amplified by repetition.)

He then learned the second line the same way and discovered that he could now recite the first and second lines together. After several lines had been learned, his mother asked Johnny what he had done at recess that afternoon. Johnny gave an exciting account of the games he had played and of a near fight.

Then, the mother suddenly asked him to repeat the part of the poem that he had learned. He did so correctly. (She thus proved that he could still remember what he had learned after his mind had been completely diverted to other thoughts.)

One-third of the poem was the lesson for that evening and he could recite it without error and with good expression for a child of his age.

The mother then said: "You have learned it well and you will remember it. Now tomorrow I don't want you to keep saying that poem over and over again in your mind. Study your other lessons and have lots of fun at recess. Don't worry about your Friday speech. You'll learn it in plenty of time and you'll do fine on Friday afternoon." (Learning, like any other work, should be interrupted by periods of rest, relaxation, and thinking of other things.)

PART 66. The preceding installment in this series appeared in the May 31 issue.

Tuesday evening the part learned was reviewed to be sure that Johnny had retained it, and then another third of the speech was learned in the same way. The final third was learned on Wednesday. Thursday was devoted to a review and to polishing up the expression.

His mother then gave Johnny some advice that may sound peculiar: "Don't think about your speech tomorrow. You know it and you *know* that you know it. It will all come into your mind when your name is called. When the recitations start, don't think of your speech but listen to the speeches that the other little boys and girls will be making." (Last minute cramming is usually bad and in the case of a speech or other public appearance it may lead to stage fright.)

Johnny's little recitation was voted the best on the program.

Some readers may say: "What has Johnny's childish speech to do with telephone learning? It was just a matter of memory. Telephone learning requires reasoning, imagination, observation and actual practice."

All learning requires memory, especially at the start. The mathematician starts by learning the multiplication tables by heart and the scientist must first learn by heart certain basic laws which have been accepted by scientists for many years.

A study of Johnny's experience will bring out several basic principles of learning and teaching. The little boy learned his speech a line at a time. When he attempted to learn the whole poem at once, he failed. To learn the theory, construction, operation, testing, and maintenance of a carrier system may seem to be a hopeless undertaking for the beginner.

However, he can easily learn one or two of the principles involved and he can go on by easy stages from there. How large a lesson can a pupil absorb at one time? That depends on the ability of the student.

The college student is expected to listen to a lecture that may last an hour and absorb it. However, the college student is a "professional" learner. His sole business in life (for the time being) is to learn. He should be, and probably is, an expert at learning. Besides, he does not actually absorb the entire lecture while listening to it. He has been trained to make written notes while listening. These enable him to recall the lecture during his study period and turn it over and over in his mind. He also has references to look up and read, problems to solve in mathematics, and experiments to perform in science.

Teaching a class of practical telephone men (unless they are recent college graduates) is quite a different matter. They have been out of school for several years. They have been busy with practical manual work, and in their leisure hours, they have probably been busy starting or maintaining a home. The steps in their lessons should be *very* short until their capacity for learning has been ascertained.

One authority on industrial training has said: "Never introduce more than three new ideas in any one lesson." However we do not believe that any arbitrary rule should be followed. Just fit the lessons to the class.

As an example of the advantage of small steps, we will give one of our own experiences. We were teaching a class of telephone men (ages ranging from 25 to 50) the mathematics useful in telephone work.

Under the heading of elementary trigonometry, our textbook treated all of the six functions in one chapter. This was very confusing to the men, as they had to remember the names, definitions, and uses of all six functions at the same time. (Too large a step.)

We told them to disregard the text and we would give a blackboard talk on *just one function.* We chose the sine and explained its meaning both as a line in geometry, and as a number in trigonometry. We demonstrated its practical use and then assigned a number of problems in which the sine would be the only function used to solve them. We did not even mention

the names of the other functions until the class had been thoroughly drilled in the use of the sine.

We next took up the cosine in the same way and assigned problems that would require the cosine only. This was followed by a set of problems in which both the sine and cosine would be used—thus reviewing the sine. When we had completed the study of the functions, no member of the class was confused as to which function or functions should be used in a given problem.

The teacher should beware of the fact that what he considers a single new idea may be a complicated series of new ideas to the students. Suppose that the subject is "carrier" and the instructor starts by saying: "You all know that speech is transmitted over a telephone line by an alternating current whose frequencies correspond to those of the sound waves that enter the transmitter. Now, at the same time, this line may transmit several other currents having frequencies above the audio band, without interfering with the normal use of the line."

This may seem to the instructor to be a simple beginning. However, all sorts of questions may arise in the minds of the students. How can one wire carry two or more currents at the same time? Does each current select a certain portion of the cross section of the wire for its conductor? How can currents flow in opposite directions in the same wire? What do you mean by "audio frequency band?" etc.

The instructor is already far ahead of the class and he may not realize it because the students hesitate to ask the questions which are in their minds. He should have asked some questions at first to determine whether or not he was starting at the right point.

When teaching craft work, one should be very careful to start at the beginning. We once showed a beginner how to form a wire around a punching, using a pair of long-nosed pliers. We then handed the pliers to him and told him to follow the example.

However, the young man had evidently never had a pair of pliers in his hand before, and he had not observed how we handled them. He had trouble opening the pliers as they did not have rings for the thumb and finger like a pair of scissors or a spring to open them as some tools have. He finally solved the problem by *using both hands to operate the pliers*. We should have started the lesson by showing him just how to grasp the pliers.

Perhaps the reader who has used pliers for many years does not know *how* he holds them. Better look and see sometime.

In a previous article (TELEPHONY, April 19, 1958) we discussed the process by which the human brain absorbs new knowledge. A reading of that article should point out effective methods for the teacher. *Eagerness to learn* is the most valuable asset to the pupil and makes the part of the teacher much easier.

However, the student must also have the *ability to learn*. "The wish to know contains not always the faculty to acquire."—Pythagoras. The instructor should not be discouraged if some do not learn. He should remember that the learner does all the learning. All the teacher can do is to inspire and direct. In a telephone class of a dozen or more, there will probably be one or more who cannot learn the subject and must be dropped out of the class.

On the other hand there is always the brilliant student who surges ahead of the teacher. The latter can be helpful to the teacher and an inspiration to the rest of the class.

The teacher should present the subject in a way that will make a vivid impression on the mind of the student. He should employ sight, hearing, and touch simultaneously when possible, so that the new knowledge will reach the brain of the student through three of the special senses; thus making a triple impression. *Repetition* will also deepen the impression and improve the memory.

How can the instructor know that the students are learning? By examination. However, we do not mean the "final examination" that is used in schools after several months of study. Little examinations or checks should be given several times during each hour of teaching. After the teacher has stated a new idea, he may ask one student to explain it in his own words; another, to tell how he would apply it; one may be asked to solve a problem on the blackboard; or to demonstrate a manual operation.

Thus, the teacher will receive an answer to the question: "Are the students keeping up with me?" *If many fail to keep up, the instructor may be at fault.*

Suppose that the student learns in class, but quickly forgets what he has learned when the school is over. Only one or perhaps a few things can be kept in the conscious mind at one time.

When a person learns something that he wants to learn and which he believes will be useful to him in the future, he tries to file it in his subconscious mind in such a way that he can recall it at will. He first turns it over and over in his conscious mind to become thoroughly familiar with it. A strong first impression and several repetitions are helpful.

In our story of little Johnny, we show how the mother checked his memory. She diverted his mind to other thoughts until she was quite sure that the speech was entirely out of his conscious mind. She then tested his ability to recall it.

We once attended a telephone school that the company considered very expensive. Each student was living at a hotel at company expense and was drawing his full salary while absent from productive work.

Also, there was the added expense of keeping each student's job going while he was away. For this reason, the company tried to cram the maximum amount of learning into the minimum number of weeks. The students were told that they must not only attend class eight hours each day, but that they would be assigned enough "homework" to keep them busy in their hotel rooms until midnight each night.

After the school was over and the men had returned to their jobs, we observed that many of them quickly forgot what they had learned in the class. We believe that we know the reason for this.

Their learning had been so continuous that they had no time to "digest" what they were learning and properly store it in their memories. We believe that the company's policy was shortsighted. The school would have been more successful (and hence less expensive in the long run), if the men had been encouraged to spend at least some of their evenings in recreation that would completely divert their minds from their studies.

Review is a great aid to memory. It gives the brain practice in recalling at will that which it has once learned. Each day's lesson should start with a review of the previous day's work. It often happens that the review takes more time than the new lesson. That is well and good if it is required. There is no point to learning and then forgetting.

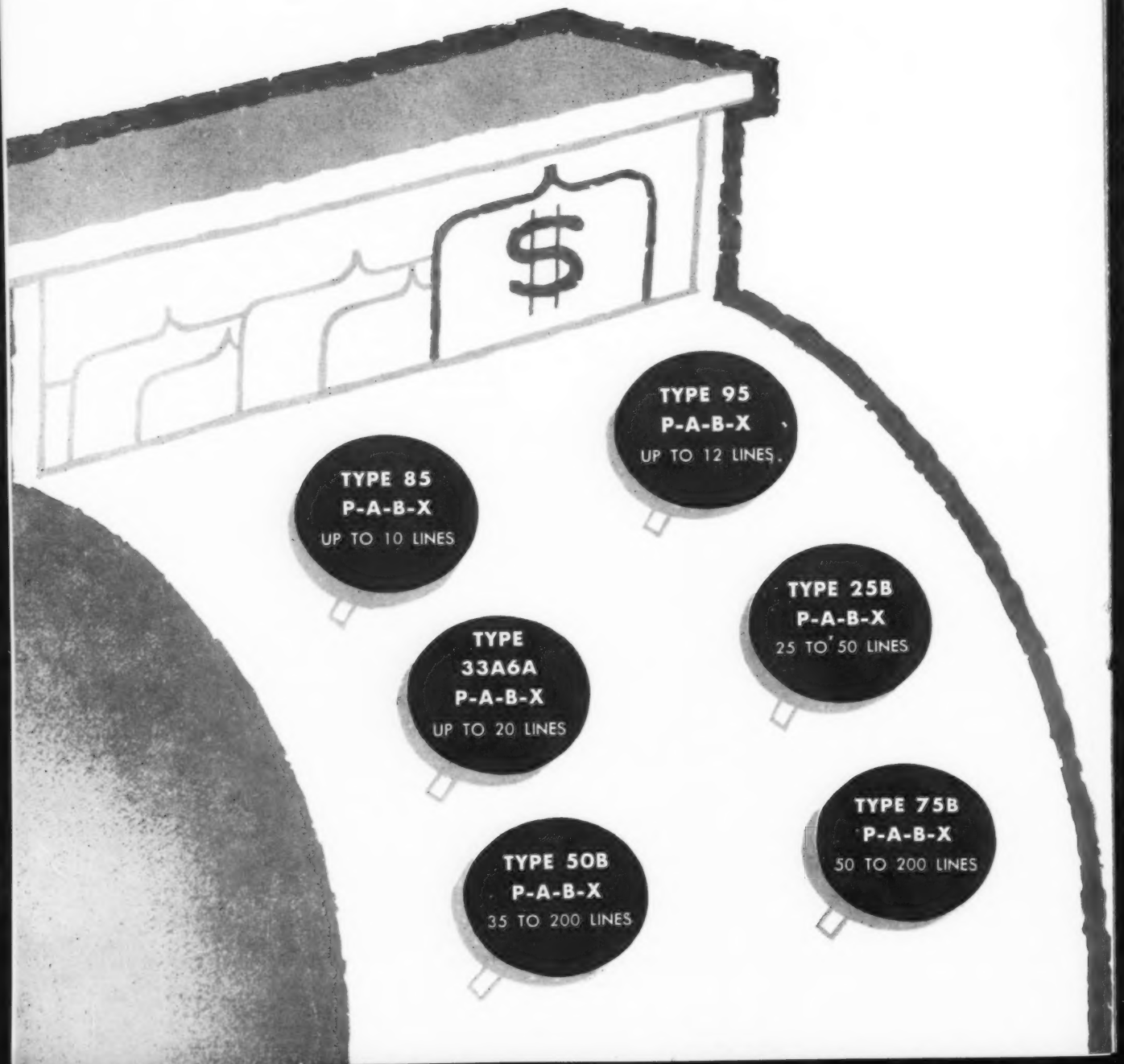
There is still another very important aid to memory that we will discuss in a subsequent article.

Prestige of Brain Power

". . . we must restore the prestige of brains and respect for intelligence and disciplined minds in every phase of American life. Material things get obsolete. But the ability to think need not get obsolete. It is your brains, your initiative, your imagination, and your know-how which we need to store in the arsenal of democracy."—J. LEWIS POWELL, *official, Department of Defense.*

3 ways Automatic helps you

INCREASE YOUR



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1. YOU GET STOCK DELIVERY ON 6 MODELS!

Automatic Electric stocks a P-A-B-X board to meet every need of your subscribers. This means you can offer businesses, large and small, a ready-made P-A-B-X system. It means you can give quick shipment, too! As a result, you'll build sales as well as satisfied customers.

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The backbone of Automatic P-A-B-X boards is quality. Components are identical to those used in the famous Strowger central office equipment. That's why telephone companies find Automatic P-A-B-X boards provide dependable service and minimum maintenance.

3. YOU GET A FREE P-A-B-X SALES KIT!

Here's everything you need to promote P-A-B-X. Prepared by P-A-B-X sales experts. Built around promotions successfully used by many telephone companies. Includes a step-by-step selling plan, complete catalog, handy individual data folders, an 8-page brochure for mailing or personal presentation, suggested sales letters, sample survey form and proposal —even a sample contract. Write for your free kit. *Automatic Electric Sales Corporation, Northlake, Illinois. Or call Fillmore 5-7111. In Canada, Automatic Electric Sales (Canada) Ltd., 185 Bartley Drive, Toronto 16.*

AUTOMATIC ELECTRIC

Subsidiary of GENERAL TELEPHONE

THE Plant Man's Notebook

BY RAY BLAIN, TECHNICAL EDITORIAL DIRECTOR

WE RECENTLY had an interesting discussion with some fire protection engineers on the use of automatic sprinkler systems in telephone exchange equipment rooms. They argue, and we agree, that expensive telephone equipment should never be installed in other-than-fireproof buildings.

If, however, this equipment is installed in a combustible building, these engineers contend that automatic sprinkler systems should be provided. The nozzles on these sprinklers release at a temperature of 165° F. Fire protection engineers claim that it is far better to have a wet exchange than one reduced to ashes. Perhaps sprinklers could be arranged to protect the building walls and attic without spraying water directly on the electrical equipment.

We also inquired as to whether automatic alarms, that operate on a specified temperature rise, would prove desirable in equipment rooms. These engineers maintain that an alarm never saved a building, but that their purpose is primarily to alert or awaken people in the event of fire so that they may escape danger. It would appear, however, that suitable alarms can be used to advantage in unattended exchanges to advise workers on duty in the central office that there is a dangerous temperature rise in a satellite exchange.

Then, we inquired as to the desirability of releasing CO_2 automatically in telephone equipment rooms when the temperature rises a specified amount. These engineers do not recommend this practice as they fear that this gas might be released accidentally while workers are on duty in equipment rooms and this could prove fatal. They do not recommend the use of this arrangement even in unattended exchanges or repeater stations.

We believe that the records will prove that very few telephone exchanges are lost or even seriously damaged by fire. This is not to be construed, however, to mean that proper fire protection should not be provided at all times.

•

We continue to hear some arguments against the even count cable plan from Independents even though many of the Bell companies are now in the midst of a "crash program" involving the renumbering of nearly every wire pair in their cable system. This program requires the restencilling of all main distributing frames and terminals and the correcting of all assignment records and line cards to reflect the new pair count.

Back in 1955, the Bell System started using a new type of cable known as "PIC" in its outside plant. PIC means "polyethylene-insulated conductors." The production of this type of cable increased gradually until today all cables of 400-pair, and smaller, manufactured for the Bell System, have this type of insulation.

PIC cable claims several advantages over lead-sheathed, pulp or paper-insulated cables. It is highly moisture resistant and does not require a watertight enclosure as do the pulp and paper-insulated cables. This feature permits the use of a less expensive type of terminal that permits access to all pairs within the entire cable, rather than a type that permits access to only a certain number of pairs without a cable throw. This flexibility permits a higher utilization of cable pairs, thus reducing the amount of cable plant required to serve a certain number of telephones.

Conductors in PIC cable are color-coded to permit splicing and terminating without testing. The use of color permits identification of pairs at any point in the cable without visits to terminals or the main frame. The identification procedure, however, continued to be difficult with the present sizes of cable, such as 51 and 101 pairs.

Recently, manufacturers started producing PIC cable with an even count of pairs. This means that the extra pair—that had formerly been included in each 100-pair count, both in the old pulp and paper-insulated cables and in the new PIC cable—has been discontinued. Now, PIC cable is being produced with an even count of 1-50, 1-100, 1-200, etc. It is being made up in groups of 25 pairs with each group having the same color code. This permits more convenient identification of pairs within the group since only 10 colors are involved. The groups are identified by different-colored binders.

The use of even-count PIC cable on new construction is a simple operation, but the integration of even-count cables with existing uneven-count cable presented a problem. To effect this integration, many of the Bell companies have decided that all existing uneven-count cable must be renumbered on an even-count basis. In the case of large-sized cables, the end result is a count of 1-100, 1-X, 101-200, 2X, 201-300, 3-X, etc. At points where even-count PIC cable is spliced to existing uneven-count cable, the "X" pair is being dropped.

The Bell companies realized that integration of the two systems could be accomplished over a long period of time in any particular exchange. But, they knew that with continuing activity in the cables, confusion would result from the two methods of pair identification. Therefore, they have decided to make the change on a crash basis, with all of the conversion work being completed in each exchange in the shortest time possible. The even-count system is making possible simplified methods in engineering, assignment, splicing and terminating work; a saving that will completely offset the initial expenditure of the conversion program and which will be effected in a comparatively short time.

Scientific tree care needs scientific skills, too!

The treatment in this case was only the skilled application of a mallet and chisel. However, it took the trained eye of a Bartlett Tree Expert to observe from the slightly flattened contour at the base of this otherwise healthy tree, that under the soil it was in the process of self-destruction by the girdling embrace of one of its own roots. Diagnosis and treatment not unlike the teamwork of the physician and surgeon.

A shade tree with its own life process and susceptibility to disease often requires scientific skills that can be acquired only through long years of study and research. Similar to human ailments, tree infirmities that are neglected or improperly treated may result in serious losses. Only through scientific care can America's rich heritage of shade trees be preserved.

Scientific tree care is available to you through your local Bartlett representative, a highly skilled technician backed by the knowledge and experience of the Bartlett Tree Research Laboratories. When judged by results you will find the Bartlett Way—the scientific way, the safest and most economical.

Consult your Bartlett Tree Expert today. You will profit by his recommendations.

REMEMBER

Our long experience in working with both utilities and the public is your assurance of dependable work and good customer relations.

BARTLETT TREE EXPERTS

Home Office, Research Laboratories and Experimental Grounds, Bartlett School of Tree Surgery, Stamford, Conn. Local Offices from Maine to the Carolinas, and West to Indiana. See your Local Telephone Directory for Local Address.

Courts and Commissions

Utility Reimbursement Law Upheld in Florida

Constitutionality of a 1957 Florida law permitting the state to reimburse utilities for the cost of moving their facilities when necessitated by interstate highway construction was upheld by State Attorney General Richard Ervin in an opinion rendered on Sept. 4 and directed to State Road Board Chairman Joe Grotegut.

Although the law specifically allows the state to pay the entire cost of relocating utilities on interstate projects, with the federal government reimbursing the state 90 per cent of the cost, it provides that the utilities themselves shall bear the expense of relocating their facilities on other types of highway projects.

Ervin noted in his opinion that the act treats all utilities alike with regard to the interstate system and all are treated alike with regard to other federal-aid highways and also with regard to other state and local highways. He declared that if there is reasonable and rational basis for these classifications the act is valid.

The attorney general noted that Congress itself, in enacting the 1956 federal highway act, "showed a substantial difference in its treatment of the interstate system as contrasted with its treatment of primary and secondary systems as shown by the difference in the matching funds for the two systems."

The federal contribution is 90 per cent in the interstate system, as compared to 50 per cent for other primary and secondary systems.

Ervin said that the fact that the Florida Legislature saw fit to permit the state to pay utility relocation costs on interstate road jobs and not on others does not void the 1957 act because it treated all persons similarly situated the same with respect to repayment of relocation costs.

Gets OK on Bonds in Pa.

Commonwealth Telephone Co., Dallas, has received Pennsylvania Public Utility Commission authority to 2 million dollars worth of first mortgage bonds, it was reported on Sept. 5. The company plans to use 1.1 million dollars of the proceeds to retire short-term notes, the balance being slated for construction.

Awarded $2,142 Increase In North Carolina

Pinebluff Telephone Co. has been authorized by the North Carolina Utilities Commission to increase its rates by approximately $2,142 a year (TELEPHONY, Aug. 23).

The commission order said the company, which serves 345 customers, "might reasonably expect annual gross operating revenues of $23,148.70" under the new schedule, which is effective with the next billing, compared with $21,006.70 in gross revenues under the present schedule and operating expenses of $27,461.

The order noted that the firm could increase its gross revenues to $27,461.13 a year if it levied mileage tolls for multi-party service outside its base rate area. Thus far, the company has not elected to make the additional charge because it might cost it some subscribers.

New business rates will be $9.00 for one-party service; $8.25 for two-party; $7.75, four-party; and $6.50 for multi-party.

New residence rates are $5.50 for one-party service; $4.75, two-party, and $4.25 for both four-party and multi-party service.

Tenn. High Court Nullifies Relocation Reimbursement

The Tennessee Supreme Court on Sept. 1 ruled unconstitutional a law requiring the state to pay the cost of relocating utilities on interstate highways.

The decision by the court reversed a Chancery Court ruling in Davidson County (TELEPHONY, Feb. 8). The lower court had held the law valid.

The law was passed in the 1957 Legislature and called for the state to pay utility relocation costs on interstate highways. The utilities were required to pay such costs on other highways except in "hardship" cases. In hardship cases the utilities could be reimbursed by the state.

State Highway Commissioner W. M. Leech took the law into court, contending it was unconstitutional in that it called for the state to use public funds for the benefit of private concerns.

The utilities argued that having to pay the relocation costs would work a hardship on them.

Mr. Leech filed suit against Southern Bell Telephone & Telegraph Co. to test the law.

The high court merely said it was reversing the lower court and tossing out the law.

N. C. Company to Retain Rates Set Under Bond

The North Carolina Utilities Commission, in an order dated Sept. 4, allowed Carolina Telephone & Telegraph Co. of Tarboro to retain rates established under bond by the company on bills dated on and after Nov. 25, 1957.

In its initial news release covering the rate matter the company stipulated that a supplemental petition would be filed with the commission requesting consideration of its full needs. The supplemental petition was filed with the commission in March 1958 and asked increases in rates totaling 1.4 million dollars in addition to the revenue to be derived from the rates established under bond. (TELEPHONY, April 19). The commission in its order denied and dismissed the amount covered by the supplemental petition.

The total amount allowed by the commission is approximately 1.5 million dollars and is based on a 5.76 per cent return on a fair value rate base established by the commission at 67.3 million dollars. The rate base as established by the commission is nearly 4 million dollars less than the comparable figure of the company of 71 million dollars.

The commission ordered the company to discontinue effective on Oct.1, partial concession rates to charitable institu-

tions and telephone service provided without charge to municipalities under franchise agreements.

The commission also questioned the advertising expenses of the company, a major portion of which is incurred for newspaper advertising, in these words: "There seems to be very little need for advertisement of its services on the part of a company holding 7,400 applications for service."

Company spokesmen expressed disappointment in the action of the commission and stipulated that its ability to attract capital in the competitive market might be materially affected. It was brought out that adequate earnings must be available if additional new capital used for the expansion and improvement program of the company is to be attracted at reasonable rates.

They had no comment when questioned as to the possible court action the company might take pending a thorough study of the commission's order.

Idaho Independent Gains Rate Relief

The Bend Telephone Co., Horseshoe Bend, on Aug. 27 received approval from the Idaho Public Utilities Commission for an increase in rates, which will produce an estimated net income of $718.75.

The commission said records of the company showed it would have a net operating loss of $502 this year if present rates were continued.

Rejects Bell of Pa. Bid For Installation Increases

The Pennsylvania Public Utility Commission on Sept. 8 rejected a 2.7-million-dollar annual telephone installation increase sought by the Bell Telephone Co. of Pennsylvania.

The vote was four to one with only Commissioner Henry Houck voting for the increase.

The commission said the company had failed to prove any need for the increase on the basis of public hearings. Bell had asked for the increase effective last Dec. 13 (TELEPHONY, Dec. 21).

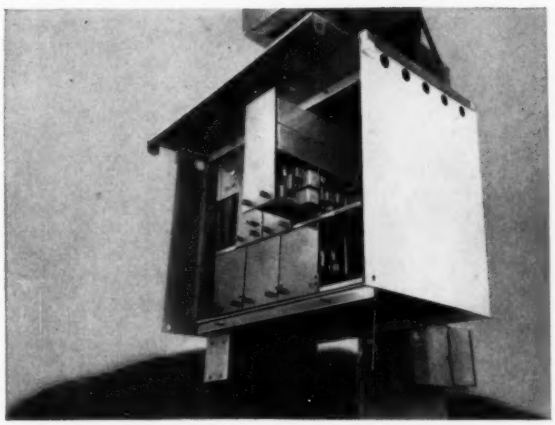
"The evidence of the record does not produce the conclusion that the proposed rates are reasonable," the commission order stated.

The rejected rates would have boosted the residence telephone installation charge from $4.25 in Philadelphia and Pittsburgh and $4.00 elsewhere, to $7.00 with a $2.00 and $3.00 increase in business reconnections.

Bell attorneys during the hearings

New Kellogg K-31 Carrier System

Ideal for Rural Subscribers



Kellogg's new K-31 rural subscriber carrier system provides telephone companies with toll quality subscriber carrier at low cost. The system is completely transistorized, features printed circuits, miniaturized sub-assemblies and plug-in construction.

Standby power, consisting of two small batteries and a transistorized charger in a pole-mounted housing, is available. This is possible because power consumption is less than three watts even during talking.

K-31 has built-in compandors to assure quiet talking circuits and is automatically regulated to eliminate the effect of changing weather conditions over a wide range of carrier line losses.

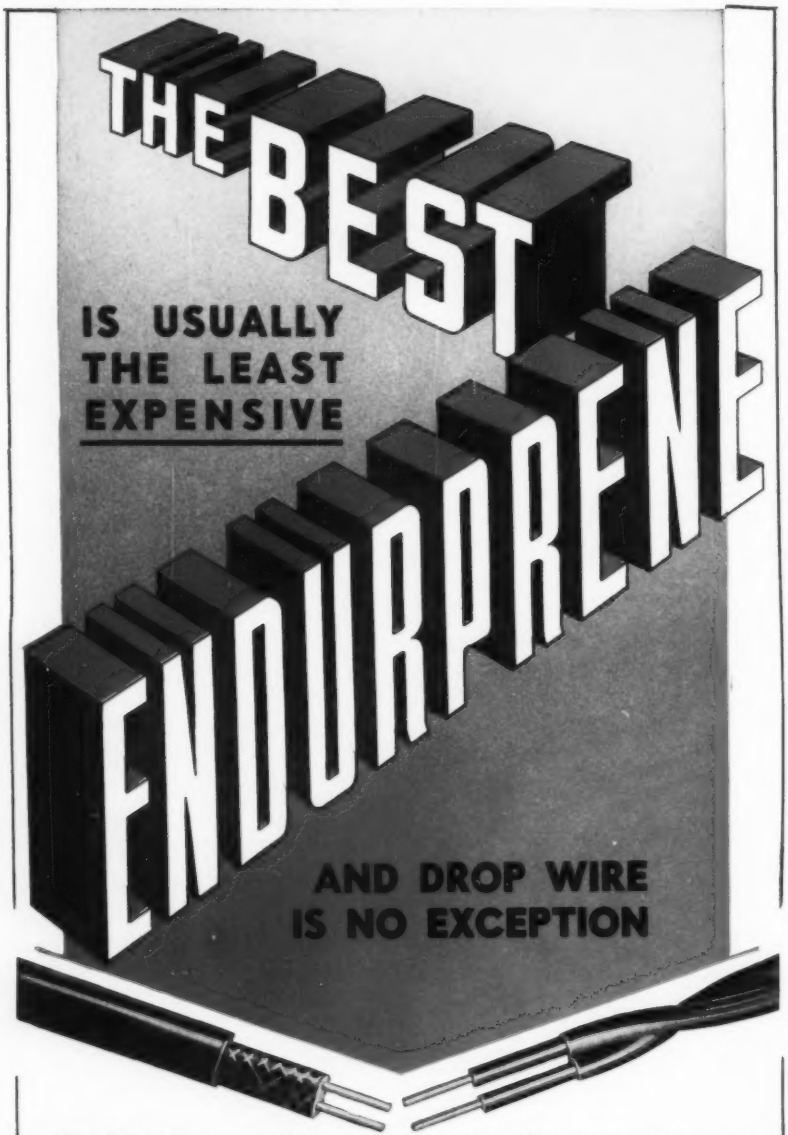
Line-up and test procedure is very simple—a single level control for each direction of transmission. Terminating telephone type jacks are provided for ease and speed in testing. Installation time is held to a minimum by the use of a unique pole-mounted housing with built-in protected terminal blocks for external connections.

These design features plus top quality components and workmanship make K-31 reliable and stable in its operation.

Ask your Kellogg sales representative for full details.

KELLOGG Communications Division of IT&T
CHICAGO, ILLINOIS

Kellogg Switchboard and Supply Company, 6650 South Cicero Avenue, Chicago 38, Illinois. Communications Division of International Telephone and Telegraph Corporation.
Regional Offices and Warehouses: See two-page Kellogg advertisement pages 26-27 for complete listing.



Rock-bottom maintenance costs—the aim of every on-the-ball plant executive—come when you buy the drop wire that stays up, year after year, storm after storm.

NEOPRENE!

Ask your own Kellogg man for the whole story. He will be glad to furnish you an interesting box of samples.

DISTRIBUTED BY:

KELLOGG SWITCHBOARD & SUPPLY CO.
CHICAGO, ILLINOIS

GENERAL INSULATED WIRE WORKS, INC.
PROVIDENCE 5, RHODE ISLAND

indicated they will shortly seek a general rate increase.

The increases were opposed by the Benjamin Franklin Hotel of Philadelphia and the cities of Philadelphia, Pittsburgh and Scranton.

Bell contended that installations and reconnection costs would have exceeded revenue from the rejected boost. The company added that it would have netted only 1.2 million dollars of the 2.7-million-dollar increase.

Monthly service rates were not involved.

Bell in 1956 proposed a 37-million-dollar annual increase in revenues, but the commission trimmed it to 13.4 million dollars.

Missouri Commission Grants Sales of Three Exchanges

Western Dial, Inc., on Sept. 4 gained Missouri Public Service Commission approval to buy the exchanges in Rockville and Schell City and to set in motion its financing plan, which includes an REA loan.

The exchanges will be purchased from United Telephone Co. of Missouri, Kansas City, and are to be converted to dial service (TELEPHONY, July 19).

•

The commission also recently approved the joint application of Eldorado Springs Telephone Co. to sell and Western Dial, Inc. to purchase the exchange at Eldorado Springs.

Hear Two N. Y. Rate Pleas

The New York Public Service Commission on Sept. 16 was to have heard the applications of the Allegany Telephone Co. and Jasper-Steuben Telephone Corp. for rate increases. Earlier this year both companies received temporary rate raises (TELEPHONY, Jan. 11).

Requests Stock OK in Ill.

The Illinois Commerce Commission on Sept. 11 was to have heard the application of the Reynolds Independent Telephone Association for authority to change its name to Reynolds Telephone Co. and to issue 3,000 shares of $25 par common stock. John K. Neaman is secretary-treasurer of the company.

Wis. Company Secures Raise

The Pacific & Wyocena Cooperative Telephone Co. has been authorized by the Wisconsin Public Service Commission to increase rates for its 154 subscribers, it was reported on Sept. 2. (TELEPHONY, Aug. 16). The increase will boost revenues by $1,300 a year.

Kan. Commission OKs Three Rate Raises; Sets Hearings

The Kansas Corporation Commission on Sept. 3 authorized Barnes Telephone Co. to increase its rates by $3,288 annually. The increase will be used to make plant improvements, a commission spokesman said.

The commission also allowed two companies to make permanent the rates they have been charging temporarily under bond, since converting exchanges to dial service. They are the Bushton Telephone Co. and the Wilson Telephone Co. for its Sylvan Grove exchange.

Richmond Dial Telephone Co. was authorized to take over the area serviced by Princeton Mutual Telephone Co. which voted to disband. The commission also set these hearing dates:

Nov. 14: Application of Telephone Service Co. Inc., Mullinville, to increase its rates about $5,000 annually.

Dec. 5: Application of Reno Telephone Association, Hutchinson, to make permanent interim dial rates now being collected at these exchanges: Abbyville, Arlington, Cunningham, Langdon, Partridge, Plevna, Pretty Prairie, and Sylvia.

Dec. 8: Request of Cawker City Mutual Telephone Co. to increase its rates by $4851 annually.

$3,470,000 Bond Issue OKd in North Carolina

The Concord Telephone Co. was authorized by the North Carolina Utilities Commission on Sept. 12 to issue and sell a total of $3,470,000 in bonds, all to be secured by a first mortgage.

The company asked permission to sell the bonds in order to replace all of the outstanding debt which it has incurred from a large expansion program, made necessary by increasing demand for service in the company's area.

Concord Telephone serves through exchanges in Concord, Kannapolis, Mount Pleasant, Harrisburg, Albemarle, Badin, Oakboro, New London, and one between China Grove and Landis.

Claims Injury Occasioned By Lightning Striking Line

In a civil suit filed in U. S. District Court in Lubbock, Tex., recently, V. E. Goodwin of Midland, Tex., seeks $41,500 judgment against Southwestern Bell Telephone Co.

Mr. Goodwin, who is acting individually and on behalf of his daughter, Elizabeth Goodwin, 18, alleges Elizabeth was injured on May 17 while she and her mother were visiting relatives near Carlisle, Tex.

The injury occurred, according to Goodwin's petition, when lightning struck a telephone line in the vicinity and traveled through it to a telephone Elizabeth was using.

The suit was transferred to the federal court from the 72nd District Court in Lubbock.

California Independent Petitions for 11.7% Raise

The Sunland-Tujunga Telephone Co. is seeking permission to increase rates by $139,000 in Sunland, Tujunga, Shadow Hills and part of La Tuna Canyon, it was reported on Aug. 28.

In an application filed with the California Public Utilities Commission, the company stated it needed an 11.7 per cent increase to offset higher operating costs.

IN THE NATION'S CAPITAL

Concluded from page 20

duction for tax purposes of expenses incurred to promote or defeat legislation.

Electric utility companies have contended that such advertisements were not in the nature of specific lobbying-type publicity, but were intended to fight competition and protect the security of their own business. The federal government is, admittedly, in the business of producing electricity. Unless public opinion is swayed to the contrary, there is grave danger that it will expand its operations in such business to the detriment of the investor-owned companies. So, the electric companies argue that they have a right to advertise in "self-defense" (of their own business) and that such advertising should be deducted as a business expense.

The IRS has agreed to invite the utility spokesmen back for talks. In the light of the prevailing economic and political climate in Washington, however, the chances are not very great that the IRS will reverse itself on this ruling. It might conceivably recommend clarifying legislation to Congress, or it might further clarify its own regulations on the subject. Some views have been expressed, for example, to the effect that utility advertising in this area, which is not addressed to specific pending or proposed public ownership legislation, might be distinguishable from advertisements dealing with actual bills in Congress or in 2 state legislatures.

Requests Sale OK in Wis.

The Wisconsin Public Service Commission on Sept. 16 was to have heard the petition of Attica Mutual Telephone Co. for authority to sell its properties to the United Telephone Co.

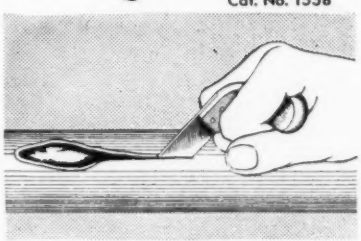
NEW KLEIN

stripping tool

for all types of control cable

Patents 2398979
2691822

Cat. No. 1558



Here is a new tool developed by Klein, designed to strip insulation from all types of control cable, flexible cords, PWC, telephone cable with vinyl or polyethylene jackets and bus drop.

Handle of cast aluminum, light in weight and with convenient grip; knife of tempered tool steel may be sharpened and is easily removed for replacement. This tool strips insulation from a few inches to as many feet as desired swiftly and simply. Does not damage conductors inside weatherproof sheath.

Write for bulletin giving complete information.

FREE POCKET TOOL GUIDE

A free copy of the new Klein Pocket Tool Guide will be sent on request without obligation.

ASK YOUR SUPPLIER

Foreign Distributor:
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Electric Corp.
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Mathias KLEIN & Sons
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7200 McCORMICK ROAD • CHICAGO 45, ILLINOIS

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INSIDE WIRING

CABLE

- **Multiple conductors paired and fully color-coded**
- **Lightweight**
- **Plastic-insulated**

Superior's Inside Wiring Cable is economical, efficient and easy to install.

Conductors are insulated with a tough vinyl compound . . . heat and water resistant and unaffected by humidity. Has high resistance to crushing and cold flow.

Easy to terminate . . . simply strip insulation.

Cross talk is minimized due to systematic varying lays of pairs.

Special vinyl jacket provides excellent protection for all inside wiring conditions.

For details, write

SUPERIOR CABLE

SUPERIOR CABLE CORPORATION
Hickory, North Carolina

3142

DIAL SWITCHING TOLL CIRCUITS

Continued from page 23

paper deals with adapting some of the techniques used in this system, resulting in equipment arrangements which will appeal to the smaller telephone companies which, for economic reasons, cannot justify installation of other types of four-wire switching, yet for technical reasons need the four-wire performance inherent in this switching arrangement.

Such a solution involves using four-wire toll switching techniques not dependent on return losses at any class of office and not requiring a manual toll switchboard. To appreciate the significance of this arrangement it is necessary to review several possible conditions.

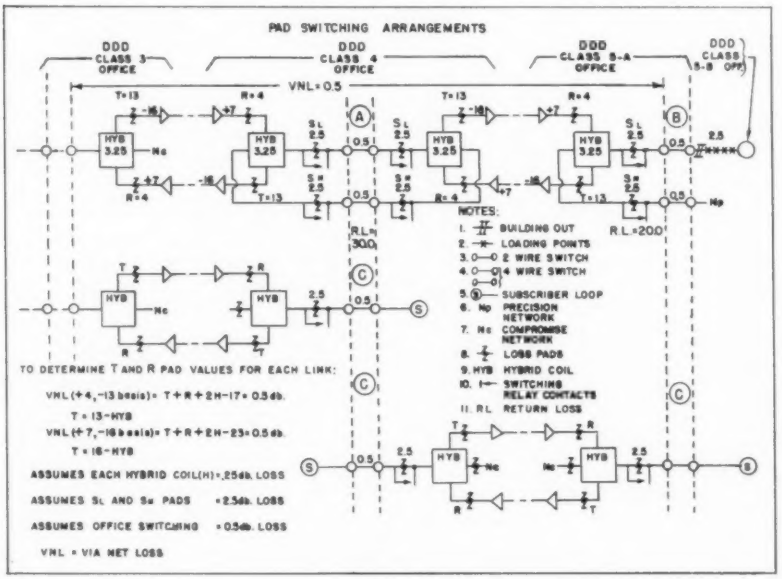

Fig. 7

Fig. 3 shows diagrammatically what the problem is in terms of present typical plant facilities, attenuation and return loss considerations. The return loss at the No. 4 office will only be of the order of 15 db. It should be noted that calls from a No. 4 office to the No. 5B office (Condition A) do not meet DDD minimum transmission require-

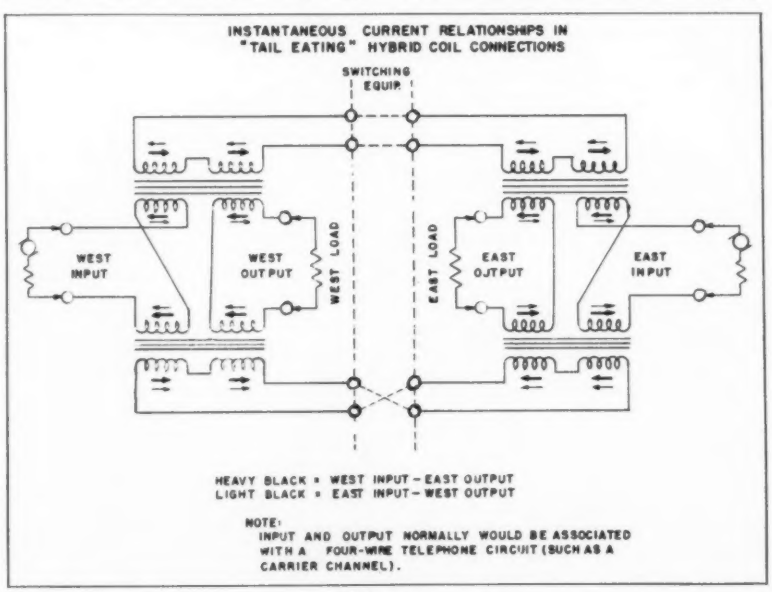
INSTANTANEOUS CURRENT RELATIONSHIPS IN
"TAIL EATING" HYBRID COIL CONNECTIONS
SWITCHING EQUIP.
WEST INPUT
WEST OUTPUT
WEST LOAD
EAST LOAD
EAST OUTPUT
EAST INPUT
HEAVY BLACK = WEST INPUT - EAST OUTPUT
LIGHT BLACK = EAST INPUT - WEST OUTPUT
NOTE:
INPUT AND OUTPUT NORMALLY WOULD BE ASSOCIATED WITH A FOUR-WIRE TELEPHONE CIRCUIT (SUCH AS A CARRIER CHANNEL).

Fig. 8

When emergencies strike...

Kellogg volunteer-fire-call operates through existing facilities

This unique system, adaptable to any type of community dial office, operates over existing lines and phones. No duplication of facilities is required, or special servicing—alarms go out over equipment that is in everyday use.

Many communities have availed themselves of the reliability, simplicity and low maintenance of the Kellogg Volunteer-Fire-Call System. It's the surest, fastest way to alert volunteers to any emergency. Your nearby Kellogg sales representative will be glad to explain the many advantages of this system for your community.

Kellogg Switchboard and Supply Company, 6650 South Cicero Avenue, Chicago 38, Illinois. Communications Division of International Telephone and Telegraph Corporation.

Check These 10 Features!

1—Works with any type of equipment

2—Automatically rings up to 10 firemen from originating call

3—Identifying—continuous ring

4—Provides emergency warning tone on busy lines

5—No restriction as to ringing frequencies on party lines

6—Reliability proved by years of continuous service

7—No special servicing

8—Easy wall mounting—40" x 18" x 10¼"

9—Optional—"Meet-Me" conference circuit

10—Optional—"Day-Night" switching circuit

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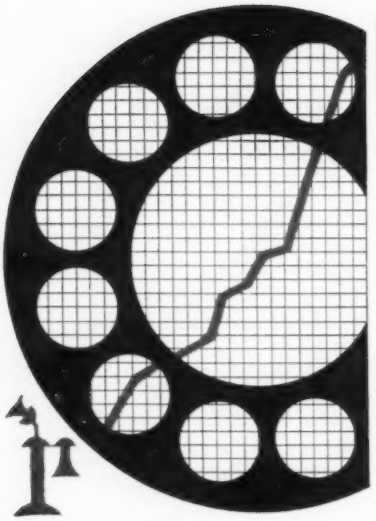
EXPORT—165 Prospect Street, Passaic, New Jersey, PRescott 9-3610, TWX PAS 1067



BUSY...since 1897... helping Independent Telephony to grow!

ENGINEERS of the telephone industry are due a world of credit. Through their perseverance and skill they lifted the industry from its crude operations in villages and small towns . . . engineered and designed it into the vast and invaluable communications facility it is today.

Engineers of Kellogg Switchboard and Supply Company, for 60 years, have helped independents to grow, to modernize, to prosper . . . through their pioneering and leadership in the conception, perfection, and introduction of new and superior equipment . . . for automatic switching, central offices, microwave links, carrier, intercommunication, and other phases of the industry.

Diversified in its operations, and with growth potentialities as certain as those of the industry it serves, Kellogg offers unlimited opportunities for achievement and advancement. No future could be built on a firmer foundation than America's ever-growing need for modern *telephone* communications.

For information on the professional needs of this long-recognized leader in telephone supply, please write to: ITT Technical Placement Office, 67 Broad Street, New York 4.

KELLOGG SWITCHBOARD AND SUPPLY COMPANY

A Division of

INTERNATIONAL TELEPHONE AND TELEGRAPH CORPORATION
67 Broad Street • New York

ments of 4 db as presently established, since no gain can be switched in at No. 5A office.

Fig. 4 shows a somewhat similar arrangement utilizing four-wire switching at a No. 4 office which results in an improved return loss figure; however, again no provision is available for gain switching at the No. 5A office, therefore, the transmission loss from No. 4 to No. 5B end office (illustrated by Condition A) exceeds the 4 db objective. Condition B shows that better than the minimum transmission requirements are attained when the call terminates at the No. 5A office.

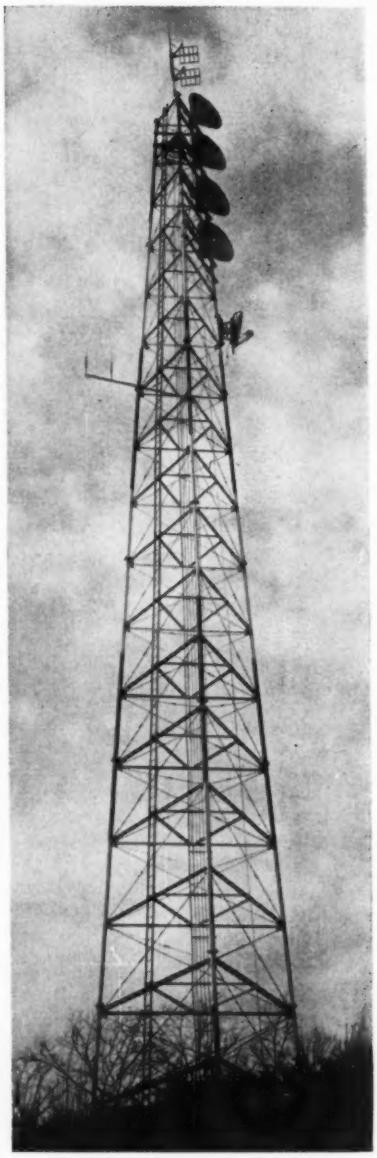
Fig. 5 indicates what might be expected if four-wire switching were provided at "tandem" switching centers (designated as the No. 5 office) with carrier derived channels connecting it to the No. 4 office.

In this instance, we assume two-wire switching is used at the No. 4 office resulting in a return loss of 15 db. It is particularly significant to note in Condition A that high return loss and, consequently, gain switching is possible at the No. 5A office. This will permit via net loss switching between the No. 4 and 5A offices and effectively make a No. 4 office out of the No. 5A office and permit better than minimum standard transmission to No. 5B end offices.

Condition B shows the transmission arrangement on traffic terminating in the No. 5A office. The 10 db return loss indicated is predicated on the improvement obtained by insertion of the 2.5 db pads in both the line and network branches of the hybrid coil. This improvement is essentially a "by-product" derived from the "padding out" of the carrier channel from the VNL condition to the TNL condition. No change in loop gain on the carrier channel itself is involved. It should be noted that the transmission losses from the No. 4 to the No. 5A or No. 5B offices are substantially identical and within the transmission objectives for an end office.

The application of four-wire switching to a Class 4 office, as well as to the No. 5A offices, as shown in *Fig. 6*, has the effect of improving the return loss substantially and thus permits exceeding the minimum performance standard currently established for a two-wire switched office, namely 27 db, and without the need for expensive office balancing. The conditions at the No. 5A office remain unchanged from those assumed for the previous figure.

Fig. 7 indicates schematically how the net loss is controlled and network switching is accomplished in the FW-1 switching equipment. Condition A shows four-wire switching of two carrier



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channels at a Class 4 office and the pad values involved. The link from the Class 3 office to the No. 4A office, as well as the link from No. 4 to No. 5A office, would be operated at VNL=0.5 db. However, when switched together on a four-wire basis, the over-all loss from the No. 3 to the No. 5A office is also only VNL=0.5 db. This is desirable and permissable because four-wire switching is essentially transparent. Condition B shows four-wire switching of a carrier channel and a physical trunk at a No. 5A office. It is assumed the physical circuit is set up for operation at 2.5 db and is equipped with a precision network. Condition C shows the pad values and compromise network when terminating on a local subscriber loop, either at No. 4 or No. 5 office.

Fig. 8 shows the basic philosophy behind the "tail-eating" switching scheme used in the FW-1 switching system and used as a basis for the solution outlined in this paper. Four-wire terminating sets of the "two repeating coil" version are shown as the transformer action involved is more easily understood. Actually, any hybrid coil arrangement or equivalent four-branch network functions in the same manner. The heavy arrows indicate the instantaneous voltages involved in West to East transmission while the light arrows indicate East to West transmission.

It will be apparent that voice voltages originating from the West "input" terminals cancel out in the West "output" and East "input" terminals, while adding in phase only at the East "output." Conversely, voice voltages originating from the East "input" terminals appear only at the West "output" terminals. The loss in either direction of transmission through such a connection depends only on the transformer losses and associated wiring and usually at less than ½ db.

Field of Application

From the foregoing, it is evident that a "tail-eating" four-wire switching arrangement has considerable merit at Class 5A or higher class offices. In each instance, it can be utilized for either terminating or through switching to achieve results as shown on *Fig. 6*. On this basis, the performance will be better than that which is anticipated for two-wire switching at corresponding offices as presently visualized for the general toll switching plan. When used at the No. 5A offices, the switched trunk return loss will be better than 20 db, whereas only a 15 db return loss is expected to be accomplished with the two-wire Class 4 office switching arrangements. At the No. 4 offices the return losses would be of the order of

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Use this fast portable trencher for cable, pipe, tubing, conduit

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Ready to go on the job, at once — no costly waiting around.

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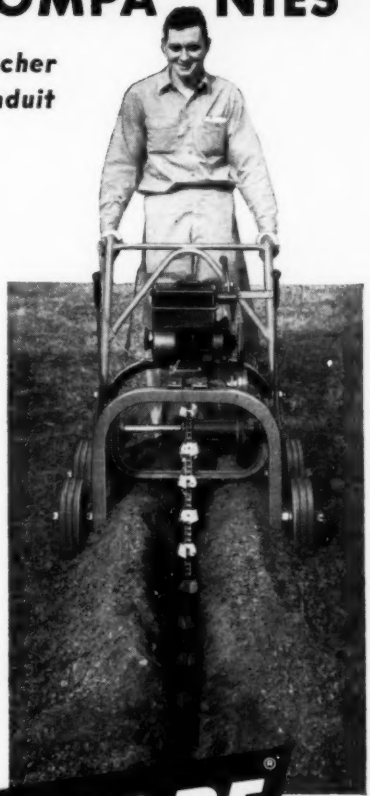
Can pay for itself in one day's operation.



POW-R-SPADE digs a neat 3" wide trench. Dirt is delivered well pulverized on each side of trench — no lumps or clods. Easy to back fill.

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Portable from job to job. Easily handled by one man.

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WE ADMIT that these are strong statements. And yet, POW-R-SPADE users confirm them again and again. For here is a machine that is ideal for trenching 3" wide to 24" deep, where larger machines are costly and impractical; where hand labor is slow and expensive. No heavy wheel marks or unnecessarily wide trench to scar lawns. Digs right up to foundation of building. Goes 1½ to 17 feet per minute, depending upon soil conditions.

A rugged machine. Easy to set and to operate. Oil-sealed bearings. Powered by a well-known engine. Minimum maintenance. Shipped completely assembled, ready to go to work for you. Additional interesting details and information immediately yours upon return of the coupon.

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30 db or better with the "tail-eating" arrangement.

Some features of the "tail-eating" hybrid coil connection are: (1) Four-wire equivalent transmission performance; (2) the initial and recurring expense (due to subsequent changes or additions) of balancing an office to achieve or retain a high return loss is not necessary; (3) flexibility in application; (4) permits interconnecting terminal repeatered physical circuits or carrier channels of all makes, and (5) interconnects a variety of impedances; (6) automatic insertion of up to 6 db of gain; (7) it is relatively inexpensive when applied in new offices or existing offices not having toll transmission switches.

When switching network terminals to precision networks, designed for a specific facility being switched and without specific office balancing, it is possible to achieve a distinctly higher return loss on two-wire connections than would be possible when switched on a compromise network basis.

Utilization of the "tail-eating" type switching arrangement at tandem switching centers (No. 5A office) may have far reaching implications in the application of SATT (Strowger Automatic Toll Ticketing) equipment. It may also have a major effect on the number of toll connecting trunks required. It should be noted that the successful application of four-wire switching at a No. 5A office presupposes utilization of toll grade regulated carrier channels interconnecting the No. 5A office with the No. 4 toll center. Carrier telephone systems of this type already constitute a substantial portion of such applications.

Summary

The "FW-1" type switching scheme provides features and transmission characteristics equivalent to those of a directional four-wire switching system, but at only a nominal increase in cost over present commonly used two-wire toll switching arrangements. The use of this scheme permits gain switching at "tandem" switching offices, thus solving a difficult transmission problem for "community of interest" telephone systems when integrated with the nationwide DDD network. The conversion of most existing offices to this switching arrangement will generally involve replacement of existing intertoll switch trains and their associated wiring. In those situations where a new installation is contemplated the superior features of this arrangement certainly justify the slight additional cost.

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MERCHANDISING

Continued from page 25

perimentation with supporting research into human habits and motivations.

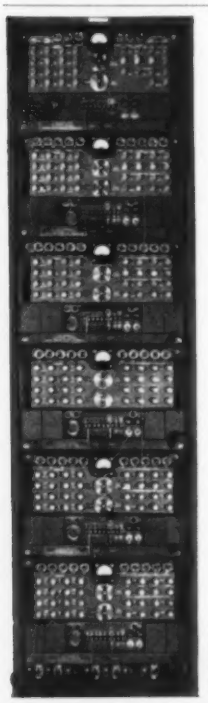
With such basic knowledge, we would be in a much better position, as of this moment, to anticipate the average user's actions and reactions when we put the enormous capacities of these giant electronic servants at his finger tips. Whatever the knowledge, its effective use would tend to reduce the inevitable and costly time lag between the engineering accomplishment and full-scale market acceptance.

Merchandiser Needs Help

As you can see, the merchandiser needs help to gain a better understanding of the market. Only through this knowledge can he make himself truly effective in support of your efforts toward a more serviceable and a more productive plant. His specific marketing responsibility—testing, pricing, and promoting the product—is secondary to this basic understanding, and the success of his contributions will depend on it.

Occasionally, though not recently, I have heard people wonder out loud whether the telephone business really has to merchandise at all in respect to aggressive search for the customer's dollar. It was said we furnished an essential service that everyone uses; also, that regulation protects the business against competition. This last point I hear more frequently from friends outside the business.

The truth is that to think of our market merely in terms of what people ask of us, or in the sense that regulation is a shelter, is fatal. The forces of competition are always ready and anx-



MINIATURIZED CARRIER TELEPHONE SYSTEMS FOR RADIO AND 4-WIRE CABLE

FOUR OR 24 CHANNELS

Two miniaturized voice-multiplex systems providing four or 24 voice channels over radio or 4-wire cable are available. They have many advantages over earlier designs: high performance, small size, light weight, low cost, circuit simplicity, low power requirements, small number of tubes of a single type only, low operating cost, low maintenance and high reliability.

These systems provide a voice-channel flat within 1 db from 300 to 3500 cycles, for each 4 kc of bandwidth occupied. Each channel is equipped with hybrid, signalling, and dialling circuits for all the standard 2-wire and 4-wire loop options.

The basic unit provides an order-wire and 4 carrier-derived channels. These units can be stacked in groups of 2, 3, 4 or 5 by means of a group modem to provide 9, 14, 19 or 24 channels. Full flexibility is provided for dropping and inserting channel groups at repeater and terminal points. Moderate lengths of 4-wire cable or open-wire line may be inserted between the multiplex equipment and the radio terminals.

24-channel carrier-telephone terminal complete with hybrids, ringing and dialling circuits, and test facilities. Dimensions are 58" high, 16" wide and 8" deep. Power input 250 watts. Weight 326 lbs.

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1080 UNIVERSITY ST., MONTREAL 3, CANADA
TELEPHONE UNiversity 6-6887 CABLES RADENPRO, MONTREAL

ious to fill any vacuum. A static attitude on our part would let them move in on whatever they could find profitable to them, leaving to us—the common carrier—what they believe to be unprofitable.

Under these conditions, to substitute a passive for an active approach to the job of providing telephone service is unthinkable. Indeed such a course would be foreign to everything we have been taught as telephone people. Our business is to move information from place to place. Our objective is to do a better job moving information this year than we did last; and so on, year after year. This is the American way.

It is the nature of our business that we must be ready to serve at all times. And, it is the nature of economic law that we must do so at a profit. Keeping service and profit at favorable levels is the essence of good management. The job has been made even harder by the extraordinary growth and almost constant inflation of the postwar period.

Two major factors have helped sustain good service and reasonable profits in the face of rising costs of money, labor and material. One is the introduction of mechanized operations; the other is the promotion of services in which the profit potential is high. When these two influences together fail to offset an inflationary trend, prices must be increased. The thoughtful telephone merchandiser will spend much of his time on this matter of profit potential. He should be especially active in promoting increased usage. The reason for this is quite apparent.

Must Keep Plant Busy

In service industries, like local transportation, power and communications, the facilities needed are usually based on a sharp peak in usage that may last only an hour or less five days a week. This means there will always be many hours in which substantial parts of the plant lie idle. Good merchandising will see to it that every opportunity is taken to keep the plant as busy as possible in these hours of low usage. Two examples will illustrate the point.

In the telephone business, our most acute peak usually comes in midmorning when people at work are busily using their office telephones. Now, it is clear that when this load drops off, there is surplus capacity available for other kinds of calls. So, if we can get a goodly number of public telephones in the stores and on the streets, and encourage their use, we will tend to generate calls in the off-peak hours, using equipment that would otherwise be idle. The off-peak assumption is reasonable because the more people you

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have shopping, or on the streets, the fewer there are to make calls from their home or office telephones. Similarly, when people are driving their cars on the highways they are not making use of the long distance channels to which their home or office telephones have access. So if you have seen more outdoor booths on highways in recent years, it is because of more active merchandising to keep our long distance circuits in constant productive use.

A somewhat comparable situation has stimulated the expansion of mass-information services such as "Weather" and "Time," which have been made possible because the engineers have given us magnetic tape recording devices and switching mechanisms that enable large numbers of telephones to have access to the tape machine at the same moment. It seems that the need or desire for such information does not coincide chronologically with the peak period of normal telephone calling. Here, again, good merchandising will build up the use of these and perhaps other off-peak services to boost our plant's productivity.

You may say that these are essentially engineering problems, too. If so, you will readily agree that we must apply engineering principles in our merchandising operations and this re-emphasizes what I said earlier about our great interest in the application of the scientific method.

Reliable Guides Needed

Scientific evaluation of the market holds special promise in providing management with reliable guides for future action. The statistical knowledge available to our economists and other social scientists includes such things as population trends and shifts, home construction and rehabilitation, employment, expendable income, gross national product. By projecting past trends, we have been able, to some degree, to predict the future, and on these predictions we make forecasts of telephone growth.

Yet, these forecasts too often miss the target, and sometimes by a wide margin. To me this does not mean we should lose faith in the scientific method. Rather, we should recognize that perhaps we have not given it enough chance. If so, we should apply the method with more vigor. If a scythe doesn't seem to be cutting through grass, we don't throw it away. We sharpen it. We need to encourage the kind of work that is being done by organizations such as the University of Michigan's social research center. The social scientists there are proceeding on the assumption that future action is based in some degree on present intent. They believe present intent is identifiable and measurable. If they are right, they will add an important factor to our existing field of knowledge. They might even bring us closer to the day when we could forecast the future with much greater assurance than we do today.

We, ourselves, have done enough work along the same line to convince us that research of this nature is on the right track. Just by asking the people most concerned, we have had some encouraging success in predicting the extent to which future telephone services would be used, various colors would be ordered, etc. In matters relating to the future action of an individual, the individual himself is probably the best source of information. The actions and reactions of the total market are nothing more than the sum of the actions and reactions of these individuals.

If then we can measure, by a mathematical sampling process, what is in the mass mind of the market at any time, we will have the most reliable gauge of what the market wants at that time. It may also prove to be a good indicator of some of the things the market will likely want in the near future. The laws that govern these actions may turn out to be no less exact or infallible than those that govern the actions and interactions of material things.

The National Science Foundation reports that the federal government spent 35 million dollars in support of the social sciences in 1957, which was less than 4 per cent of the government's entire bill for scientific research. The Bell System proportion is somewhat less, about 1 per cent, and I doubt we differ very much from industry generally. But we do have a small group of psychologists in the Bell laboratories now doing research in human motivation. Another group is engaged in testing laboratory models of equipment and services under conditions of actual public use. Also, we have a number of economists and statisticians on our accounting and treasury staffs who have made striking contributions to market analyses and in the measurement of public attitudes. A year or so ago we organized at New York headquarters a Customer Products Planning Division within the engineering department, which has responsibility for studying the wants and needs of the customers; developing the devices and services indicated by this study; testing them; measuring the market for their use, and advising as to their pricing and introduction.

So, when I say there is an awakening to the importance of basic research

in the social sciences, I am speaking from direct knowledge and not from wishful thinking. But, these scientists need the encouragement and support of their more numerous fellows who deal with the material sciences. I hope I have said enough to convince you, if indeed you were not already convinced, that your own work will be more rewarding to the extent you lend the social scientists this kind of support.

Florida Traffic Supervisor Feted on 50th Anniversary

Despite the fact that the telephone industry, as such, is relatively young (successful operation of Alexander Graham Bell's invention took place on March 7, 1876), it's not too uncommon to find a number of men who have been in telephony for 50 years.

BIRDO RILEY

However, when a woman reaches the 50-year mark of service to the industry and has served 50 years of unbroken service with the same company, that is uncommon, indeed.

In fact, General Telephone Co. of Florida's Frances Birdo Riley likely stands alone with this distinction.

Now traffic employment supervisor, Birdo Riley recalls the year 1908, when as a pigtailed, 13-year-old girl in knee dresses, she went to work for Florida General (then Peninsular Telephone Co.). Her first job with the company was as one of about 15 operators required at that time to handle both local and toll service for the Tampa area.

"It has been very interesting to watch and be a part of the growth of the company," says Miss Riley. "Today, even though we are completely dial-operated, we have 314 operators handling toll and information service for Tampa."

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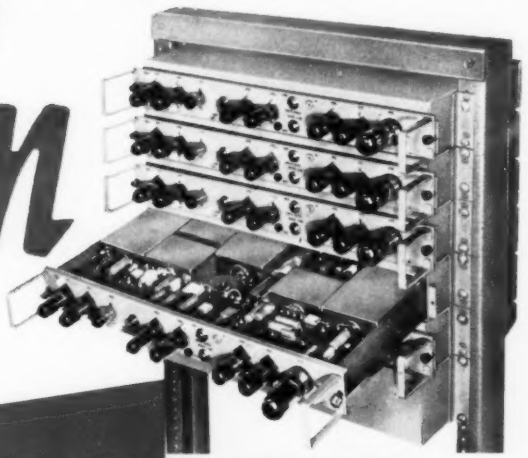

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Born at Mango, Fla., near Tampa, Miss Riley was one of seven children. She attended grammar schools in Tampa until she was forced to leave school to help support the family. It was then, when 13 years old, that she began working for Peninsular Telephone Co. When she was 18, her father, a professional citrus budder, died, and Miss Riley's contributions to the family support became even more important.

With her formal education ended at such a young age, Miss Riley assumed the task of educating herself. Her studies dealt mostly with English, mathematics, psychology and history of religions.

Following her early years as an operator, Miss Riley became an information operator and then a supervisor. When an experimental automatic exchange was installed in West Tampa, she was placed there to handle the connecting calls between the two types of service.

When operating practices became standardized, Miss Riley was the first company operator to be trained in standard toll practices. In subsequent years, she became assistant chief operator, then directory clerk, district toll instructor and is now Tampa traffic employment supervisor, a position she has held for a number of years.

In 1933, Miss Riley was presented with a 25-year service pin and became the first woman employe to complete 25 continuous years of employment with the company, shortly thereafter gaining the distinction of becoming the first lady in the company's Quarter-Century Club.

Miss Riley has been secretary and treasurer of the W. G. Brorein Council, David Laird Chapter, of Telephone Pioneers of America continuously since 1952 and also held the combined post intermittently prior to 1952. She was elected vice president of the chapter in 1957 and became president of the group July 1, 1958.

Miss Riley was recently honored for her 50-year service record, at a banquet attended by 30 woman from General Telephone Co. of Florida, all of whom have been with the company 25 years or longer.

Baby Dies; Call for Help Delayed by Party-Liners

A Franklin Lakes, N. J. woman said on Sept. 8 that neighbors refused to get off her party-line telephone two days before to allow her husband to call medical aid for their infant, who died later.

Mrs. Robert W. Brown Sr. said that her only child, five-months-old Robert W. Brown Jr., began turning blue on Sept. 6. Her husband tried to call police or an ambulance, but was unable to persuade the persons using the party line to relinquish it, she said.

The Browns share the line with four others. The couple bundled up the child and started driving to a hospital 5 miles from their home. The baby died in his mother's arms just as they reached the hospital, where he had been a cardiac patient.

En route to the hospital, they encountered heavy traffic near a fire outside of Paterson, N. J. and were forced to detour, but a policeman helped clear the way for them.

Franklin Lakes Police Chief Arthur W. Pickering said that neither of the Browns has filed charges against the other party-line users yet.

It is against the law in New Jersey not to yield a party line for such an emergency. On page one of every New Jersey telephone book, this notice appears:

"WARNING: The Law of New Jersey provides that anyone who fails to relinquish a telephone party line for a call to a fire or police department or for medical aid or ambulance service in an emergency in which property or

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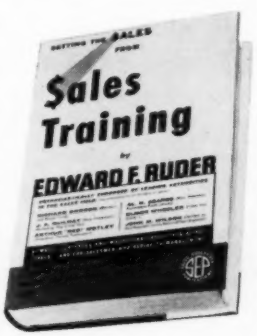

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human life is in jeopardy, unless the party line is being used for another such emergency call, and anyone who states that a party line is needed for any of said purposes knowing said statement to be false, shall be a disorderly person."

Named to Engineering Post For General in New York

Joseph J. Grumblatt, presently general equipment engineer in General's Pennsylvania company, will be transferred to General Telephone Service Corp. in New York as equipment and building engineer, it was announced in New York on Sept. 11 by Donald C. Power, president of General Telephone System.

A native of Erie, Pa., Mr. Grumblatt graduated from State College, Pennsylvania. He joined General Telephone System in 1948 as equipment engineer with General Telephone Co. of Pennsylvania.

The transfer will take place Oct. 1, 1958.

The Raft of Democracy

"A monarchy is like a man-of-war—bad shots between wind and water hurt it exceedingly; there is danger of capsizing. But democracy is a raft. You cannot easily overturn it. It is a wet place, but it is a pretty safe one." JOSEPH COOK.

REA Approves Three Telephone Loans

The Rural Electrification Administration has approved the following telephone loans:

The Glenwood Telephone Membership Corp., Blue Hill, Neb.; $1,035,000; Sept. 2.

This new borrower proposes to use the funds to improve service for 1,585 rural subscribers, and to furnish initial service to 157 farm families. The present subscribers are now receiving magneto service from the following telephone companies which the borrower plans to acquire, improve and expand: The Glenwood Telephone Co., Blue Hill; the Lawrence Telephone Co., and the Kearney County Independent Telephone Co., Norman. These facilities, which will serve as a nucleus for the new service, consist of eight exchanges.

New construction planned includes automatic central offices at Bladen, Blue Hill, Holstein, Lawrence, Norman and Roseland. The Cowlen and Rosemont communities will be served from the Blue Hill exchange. Present plans include remodeling the existing Blue Hill building for headquarters of the system. The borrower plans to install two-way radio facilities for maintenance purposes.

Jerome Konen is president and Ben Wagner is manager of Glenwood Telephone Membership Corp.

•

Palestine (Ill.) Telephone Co.; $209,000; Sept. 3.

This loan is to improve service for 454 existing subscribers and to furnish initial service to 148 rural families. The existing subscribers are now receiving magneto service from the Hutsonville Telephone Co. The borrower proposes to acquire, improve and integrate these facilities. A new automatic central office is scheduled at Hutsonville.

The Palestine company has received two REA loans totaling $693,000 which will enable it to furnish new and improved service to 2,068 subscribers. The completed system will consist of four exchanges. The Birds, Hardinville and Palestine exchanges are now in operation furnishing dial service to over 1,400 rural subscribers.

D. M. Houpt is president and W. A. Parker is manager of the Palestine Telephone Co..

•

Oregon (Mo.) Farmers Mutual Telephone Co.; $334,000; Sept. 4.

Loan funds will be used by the new borrower to improve service for its 703 rural subscribers and to furnish initial service to 93 farm families. At present, the company provides magneto and common battery service.

New automatic facilities will be installed in the present central office building in Oregon. The same building will serve for commercial office purposes. A portion of the loan will refinance the borrower's indebtedness incurred by improving the existing system.

Ernest Oppenlander is president of the Oregon Farmers Mutual and R. E. Williams is manager.

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Rotary To Hear Kentucky Independent's Program

The Consolidated Telephone Co. of Florence, Ky., as part of its effort to keep its customers informed regarding the 2 million dollar expansion and modernization program now under way, has arranged a unique program to be presented to the Florence Rotary Club and its guests on Sept. 29.

A loud-speaker telephone will be installed at the meeting place of the Rotary Club and arrangements have been made for Florence to be connected temporarily with the foreign area customer dialing network.

The loud-speaker telephone and the ease with which long distance numbers can be dialed will be demonstrated by placing two long distance calls. The first of these calls will be placed to R. C. Reno, editor of TELEPHONY, in Chicago, who will address the group on the subject of Independent telephony. The second call will be placed to Honolulu where J. Ballard Atherton, president of the Hawaiian Telephone Co., will greet the Florence Rotary Club.

The Consolidated Telephone Co. is in process of converting all its exchanges to automatic operation. Two of its present automatic offices are now on the Direct Distance Dialing (DDD) network in the Greater Cincinnati area and are scheduled for the nationwide network within the next year.

G. B. Foscue of Wilmette, Ill., is president of the Consolidated company and G. B. Foscue Jr. is vice president and general manager.

Dominican Co. Takes Over Government Facilities

Compania Dominicana de Telefonos, C. por A. has executed a contract amendment with the government of the Dominican Republic covering future telephone operations throughout the republic.

The amendment to the present contract, which was signed in 1931, includes the revision of certain rates to conform with modern telephone practice and the extending of the Ciudad Trujillo base rate area. The telephone company will also take over that part of the government radio-telephone and teletype network that will coordinate with the telephone company's network for operation on a commercial basis, at standard long distance rates currently in effect.

The amendment provides for rates that will produce an adequate rate of return on average invested capital. Also included in the amended contract is the provision that stock in the company will be made available for purchase by Dominican persons or companies. The stock issued locally will not at any time exceed 40 per cent of the total capital shares issued and outstanding.

The local participation feature of the contract amendment is considered advantageous both to local interests in Dominicana and to the present stockholders of the company.

Kentucky Independent Names Controller

Herbert E. McCurdy, of Aurora, Ill., has been named controller for the Northeastern Telephone Corp., London, Ky., and affiliate companies in Kentucky and Illinois, according to an announcement by Perry D. Woodward, executive vice president.

H. E. McCURDY

ESTILL DAVIDSON

Mr. McCurdy replaces Bill Hofius, who resigned to take a position with H. E. Scheberle Inc., Brodhead, Wis.

The new controller is a graduate of

the University of Illinois and did post graduate work at Marquette University. He has held positions with the Independent Pneumatic Tool Co., Arthur Andersen & Co., and the Stoner Mfg. Corp. His office will be in Chicago.

A second position, that of purchasing agent, has been filled by Estill Davidson of London, Ky. Mr. Davidson will handle purchasing for Northeastern and associated companies. He is a graduate of Eastern Kentucky State College and has taught school for 21 years, including two years at Sue Bennett College, London, Ky.

Smith Named Head of IBM Data Processing Division

McLain B. Smith, vice president and assistant general manager of the Data Processing Division of International Business Machines Corp., has been appointed vice president and general manager of the division, and a member of the corporate management committee. He succeeds L. H. LaMotte, executive vice president, who continues as a member of the corporate management committee and will now exercise general management responsibilities instead of directing the affairs of the Data Processing Division.

Gilbert E. Jones, manager of marketing and service for the Data Processing Division, becomes assistant general manager.

Both Mr. Smith and Mr. Jones have served in top sales management posts in IBM's Data Processing Division, the company's largest, now located at White Plains, N. Y. Prior to serving as assistant general manager of the division, Mr. Smith had been in charge of IBM's federal government business in Washington, D. C. Mr. Jones' previous assignments included that of sales manager of the Data Processing Division.

Stromberg-Carlson Sets Toll Ticketing School

The Stromberg-Carlson Type 40 LID (Line Identification) Toll Ticketing School has been established by the company, according to an announcement by Robert M. Seibert, manager, Telecommunication Engineering Administration.

Mr. Seibert also announced the appointment of Robert C. Parsons as instructor-in-charge of the company's Telecommunication Training School and chief instructor of the newly established Toll Ticketing School. In his new post, Mr. Parsons will supervise training activities within the scope of

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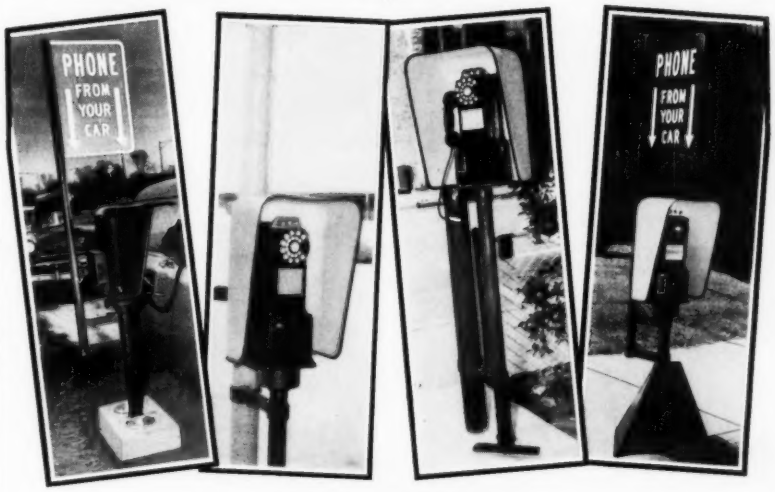

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Telephone companies throughout the country have now installed Suttle "Phone-From-Your-Car" booths. They have found that revenues are as much as 300% higher than those collected from full length booths in comparable locations.

Now manufactured by Suttle in five different models (see below), both Drive-Up and Walk-Up Booths can be fitted with various types of lights and signs. Suttle booths use standard A.E. or W.E. pay-stations, the Drive-Up using a standard 9-foot Koiled Kord.

Model DUO	Drive-Up, mounted on concrete with tripod and skirt (sign post, signs, lights optional)	$118.75
Model DUI	Drive-Up, mounted in concrete (sign post, signs, lights optional)	$99.50
Model WUO	Walk-Up, mounted on concrete with tripod and skirt (sign post, signs, lights optional)	$118.75
Model WUI	Walk-Up, mounted in concrete (sign post, signs, lights optional)	$99.50
Model WUOBM	Walk-Up, mounted on concrete, with building mount and bracket, tripod and skirt (for mounting adjacent to and on buildings, posts, etc.)	$136.25

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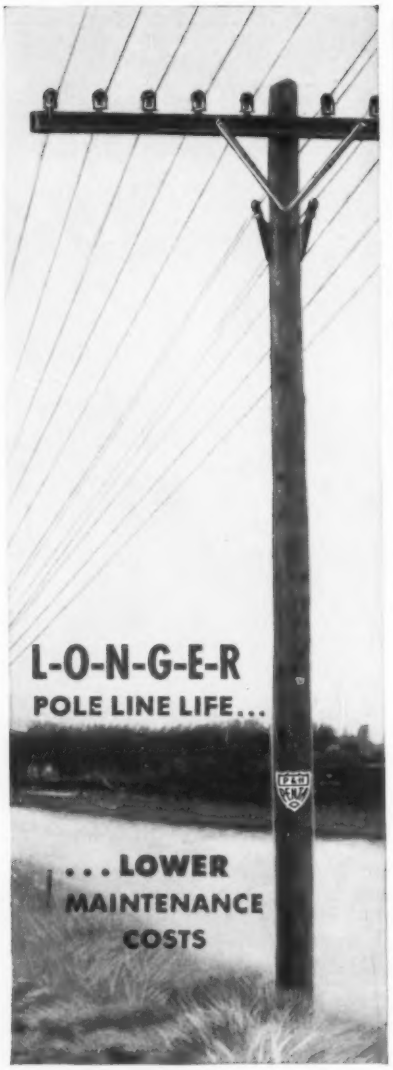

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the school, including both the XY and toll ticketing schools.

Instructions during each eight-week long session will be given by qualified instructors, all members of the Telecommunication Engineering Department. The first class will start Oct. 13, the second class will begin training Jan. 5, 1959.

R. C. PARSONS

The curriculum of the new school emphasizes practical operation of the equipment. Classrooms will simulate a typical small line identification (Type 40 LID) installation, which will enable the student to observe and work on the same type of equipment he will use in his own central office.

Training will emphasize: (1) Fundamentals of toll ticketing and Direct Distance Dialing (DDD) from a systems viewpoint; (2) circuitry, and (3) trouble shooting techniques, including rapid isolation of trouble by proper circuit component analysis and the proper use of test equipment.

The eight-week training period is divided into two courses. The basic course, six-and-one-half weeks long, will consist of the following: (1) Recording, (2) readout, and (3) power. The optional course, an additional one-and-one-half week period, is conducted for those whose installations include register-senders and remote identifying equipment.

Arrangements to attend the school may be made through the General Sales Manager's office, Telecommunication Division, Stromberg-Carlson, Rochester 3, N. Y. Students will be required to have had the XY dial switching course or equivalent practical experience.

Unwise Additions

"Every one is as God made him, and often a great deal worse."—CERVANTES.

T. L. Mahoney Jr. Joins Warren as Sales Engineer

The Warren Manufacturing Co., Inc. of Littleton, Mass. has announced the appointment of Timothy L. Mahoney Jr. to field sales engineer on telephone equipment. The company manufactures the Warren Transistor Multi-Ringer, battery chargers and power equipment.

Mr. Mahoney formerly was with Kellogg Switchboard & Supply Co., where he was engaged in writing power job specifications and calculating and analyzing power requirements. He started his telephone career with the New England Telephone & Telegraph Co. as an installer and tester of switching and power equipment.

He served in the Navy during World War II and the Korean conflict in the Navy's radar and sonar activities.

American Creosoting Names St. Louis Representative

American Creosoting Corp., a subsidiary of Union Bag-Camp Paper Corp., has announced the appointment of W. R. Webb as sales representative.

A member of the company since 1957, Mr. Webb served most recently as assistant to the general superintendent. In his new capacity, he will cover the St. Louis sales territory.

William S. Gage, manager supply sales, has been assigned the additional duties of manager, marketing services division, by Automatic Electric Sales Corp. The announcement was made by D. H. Deaver, sales corporation president, who said Mr. Gage's new duties would include general administrative supervision of sales promotion, marketing research, sales training, and related activities.

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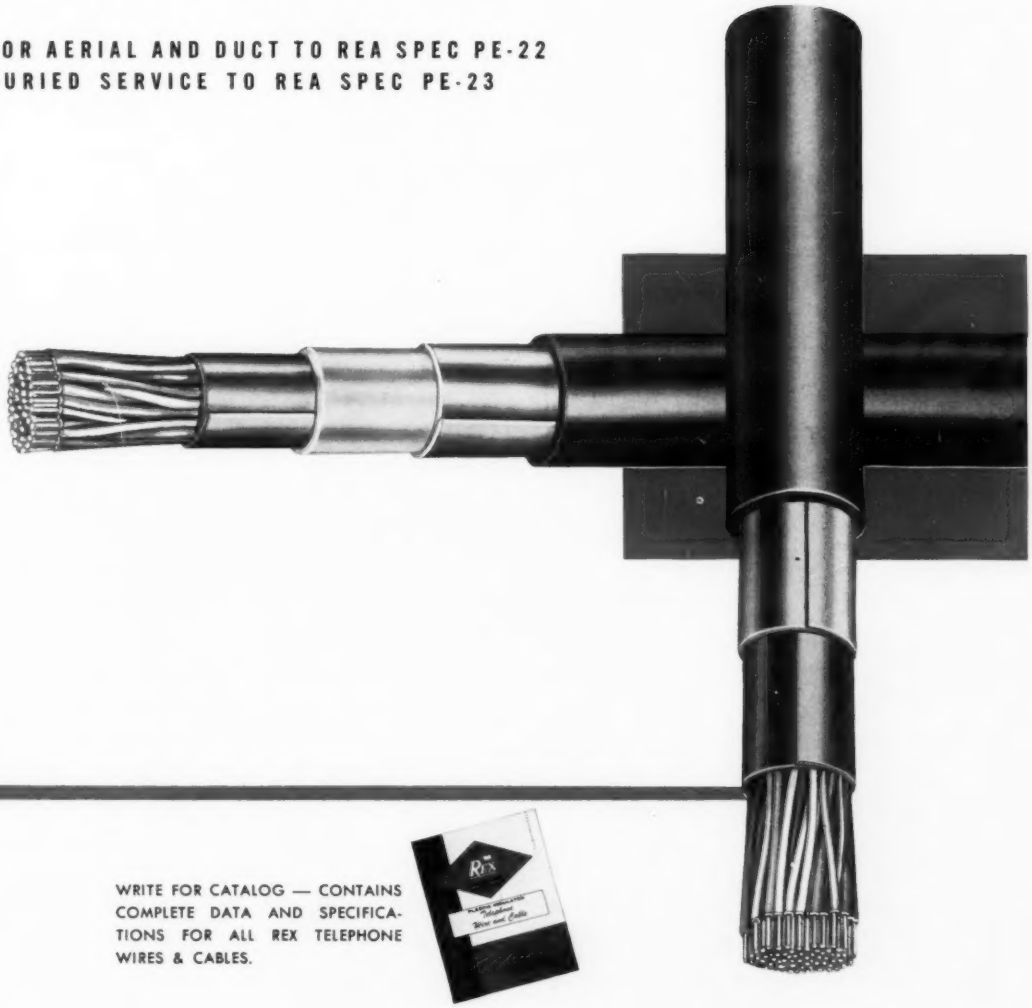

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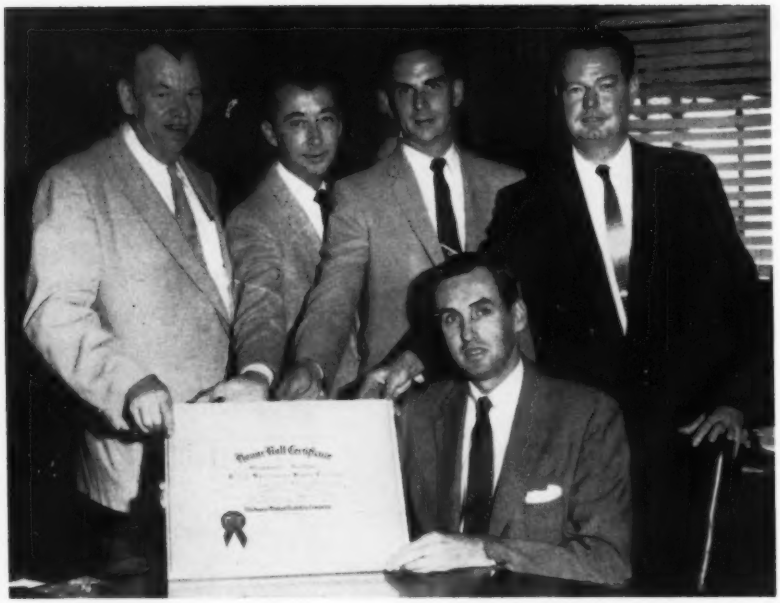

George T. Scharffenberger (seated), president of Kellogg Switchboard & Supply Co., gets four helping hands in displaying the first honor roll certificate awarded by Michigan Mutual Liability Co. for 3 million hours worked without a disabling injury. Charles H. Jones (standing left), district supervisor of the liability company, presented the award. Officers of the International Telephone & Telegraph division who engineered the safety record are (from right) T. J. Minogue, labor relations, security and safety manager; E. F. Rousch, industrial relations director, and John Plowman, plant security and safety supervisor.

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W.E. 551 A, 40 line, rebuilt like new ..... $400.
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UNITED UTILITIES, INCORPORATED
54th Consecutive Dividend

The Board of Directors declared a quarterly dividend of 30 cents per share on the outstanding common capital stock of the company, payable on or before September 30, 1958, to stockholders of record at the close of business September 12, 1958.

Abilene, Kans. ALDEN L. HART,
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NEEDED—a Switchman and a Construction Foreman for company in the Southwest. Experienced men only need reply. State all particulars in first letter. Write Box No. 4139, c/o TELEPHONY.

GENERAL CONSTRUCTION SUPERINTENDENT by active mid-western contracting firm. Must have experience in all phases of telephone plant construction and ability to supervise and train others. Travel expenses. Salary commensurate with experience and ability. Reply Box No. 4143, c/o TELEPHONY.

JUNIOR ACCOUNTANT with at least one year's experience in auditing, general accounting, or office management. Public utility experience preferred but not essential. Send reply to Citizens Utilities Co., P. O. Box 1789, Redding, Calif., attention C. B. Bromagem.

JOURNEYMAN STATION INSTALLER REPAIRMEN and JOURNEYMAN EQUIPMENT INSTALLER REPAIRMEN with at least second-class radio-phone license. Telephone or write: W. B. Crays, general plant manager, Intercounty Telephone & Telegraph Co., Fort Myers, Fla.

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OUTSIDE PLANT ENGINEER WANTED—Large operating company in Latin America is looking for man with extensive U. S. experience in outside plant design and construction. Offers attractive salary and allowances. Send résumé and a recent snapshot; we'll respect your confidence. Address Box No. 4142, c/o TELEPHONY.

MAN CAPABLE OF ASSUMING DUTIES of plant engineer and superintendent of telephone company consisting of nine exchanges with 4500 stations. Must have extensive experience in all plant operations both inside and out. Write Box No. 4149, c/o TELEPHONY.

EXPERIENCED COMBINATION MAN to take over repair and maintenance of a dial telephone system of 500 stations. Must have knowledge of automatic equipment and be familiar with REA specifications. Give references and full information. Runestone Telephone Ass'n., Hoffman, Minn.

OUTSIDE PLANT ENGINEER. Opportunity with U.S.-owned firm in Latin America. Outside plant engineer capable of planning, estimating and supervising overhead and underground cable construction. A continuous operation involving residence in modern capital city. Please forward résumé in complete confidence and state salary required. Box No. 4150, c/o TELEPHONY.

CHIEF ENGINEER WANTED—Latin-American operating company (about 100,000 stations) wants man with U. S. experience in all phases of telephone operation, including automatic and microwave. Permanent position for right man; original contract for one year, renewable. Attractive salary and allowances. Knowledge of Spanish would help, but is not essential. Send résumé of experience, together with a recent snapshot; it will be held confidential. Address Box No. 4141, c/o TELEPHONY.

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